# Echo Ireland

Irish Radio Transmitters Society

March 2017 - 85 Years

## Coolmine Rally February 2017


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Larry McGriskin EI9CN
Pat O'Connor EI9HX

# News from around the Clubs

## Tipperary Amateur Radio Group

### Hugh O'Donnell EI2HI

We installed our new 70cm repeater EI7HXR on 4th of December 2016 at Harneys Cross near Clonmel, Co Tipperary. The repeater operates on 430.850Mhz with input on 438.450Mhz (+7.6Mhz) - a CTCSS tone of 103.5hz is required. This new repeater is connected to the Southern Ireland Repeater Network with an output power of 30watts. On site for the installation were Gareth EI7FZB, Neil EI3JE, John EI8JA, Tommy EI2IT, John EI7IG and Hugh EI2HI. Reception reports can be sent to Hugh EI2HI or John EI8JA. *sirnrepeaters.blogspot.ie*

*Gareth EI7FZB, Neil EI3JE, Tommy EI2IT, John EI8JA and John EI7IG. (Photo : Hugh EI2HI)*

**Front Cover Photos : EI2JZ & EI5DI**

**Row 1**
Declan EI9HQ
Sean EI7CD
George EI2CPB

**Row 2**
Brian EI8IU & Hannah Canning
Steve EI5DD & Gerry EI8DRB
Tony EI5EM - reading the IRTS 80m News

**Row 3**
Gerry EI9DZ & Joe EI2JZ
Dave EI9FBB & Pat EI9HX at the 9N7EI stand
Caroline & Bernard Mothersill

**Row 4**
Michael EI3KN
Robert EI5KH
Tony EI9GUB
Leo EI8BR
Dermot EI6FZ
Charles EI2EM

## Mayo Radio Experimenters Network

### Dominic Curtin EI9JS

On 1st January we decided to compete in the 80m counties contest as a portable station. If time permitted we also wanted to activate our Wild Atlantic Way call for Mayo EI44WAW. The day turned out to dry and bright but there was a cold breeze so not a day for standing about. All was up and running by about 2.15pm so we decided to use or WAW call until 3pm on 20m, and we soon had a pileup. At 3pm we changed to 80m and EI0M/P for the contest. We worked 25 counties and 3 Wild Atlantic Way stations.

The winner of our annual club competition for 2016 is John EI7FAB. Well done John. *ei7mre.org.*

*Jimmy EI2GCB and Dominic EI9JS in the Counties Contest*

*MREN 80m Counties Contest location and Antennas (Photos : Padraic EI9JA)*

### 36th Lough Erne Radio Rally

The big traditional gathering of EI, GI & MI amateurs and enthusiasts - Sunday 7th May 2017

SHARE Centre, Lisnaskea, Co Fermanagh
(SatNav - BT92 0EQ)

Free Tables - Mark EI4HDB, 087 657 4668
*MTMullaney@eircom.net*

Bus Éireann Service 30 to/from Derrylin
SHARE bus connects.

*www.learc.eu*

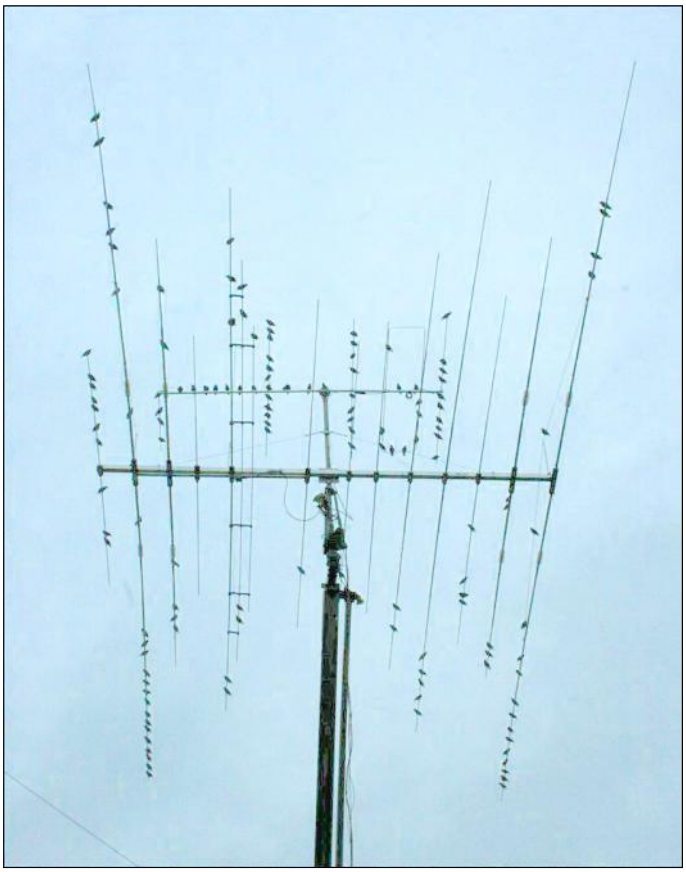
## Avondhu Radio Club

The Club held its AGM on February the 5th. The club is in its 5th year and first was active in September of 2013 for the IRTS SSB Field Day. All members were in attendance.

Achievements during 2016 were reviewed and plans put in place for the coming year. One highlight from 2016 was the ARRL DX SSB Contest. EI1E entered as a multi-op low power entry, achieving 1st Ire, 2nd EU, 3rd DX.

Newly appointed officers were:

| | |
|---|---|
| Chairman: | Hans Krauss EI9GRB |
| Secretary: | Joe Cherry EI7HIB |
| Treasurer: | Denis O'Flaherty EI4KH |
| QSL Manager | Gerard Scannell EI5KF |



*Starlings take roost at EI1E* *Photo: Avondhu*

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## EIDX Group

### Dave Deane EI9FBB

Members of the EI DX Group have announced details of their forthcoming DXpedition to Nepal from March 8th to 20th. This eleven man, all EI team, will run up to five stations for nine consecutive days from 80 metres through 10 metres on CW, SSB & Digital.

Nepal is currently #91 Most Wanted DXCC in the world and an amazing #31 most wanted in North America. Operating from a QTH at 5,600' above sea level, the team are looking forward to intense pile-ups and will be listening carefully for fellow EIs.

IRTS has made a donation to the team to help defray expenses.

For full information, please visit the 9N7EI website....*9n7ei.com*


## South Dublin Radio Club

### Daniel Cussen EI9FHB

As part of Engineers Week, there will be a talk on an Introduction to Amateur Radio for total beginners and also a quick guide to using the moon to bounce radio signals as part of an EME or Earth Moon Earth radio contact. This event is free and all are welcome. Simply drop down on Tuesday 7th of March at 8:30pm More than 500 similar events can be found on the Engineers week website: *www.engineersweek.ie*

The equipment installed by club members at the National Space Centre was used to assist in a school contact between a French Astronaut and a French school recently. The equipment installed 3 years ago receives live video via the Amateur Television equipment on board the International Space Station. It was previously used during school contacts with the UK Astronaut Tim Peake.

Club activities include regular talks/presentations by members. Photo on left shows Joe EI6EG describing his experiences designing a Moxon Rectangle antenna.

The club can be contacted at *southdublinradioclub.ie*

## Limerick Radio Club

### Simon Kenny EI7ALB

The existing 70cms repeater on Woodcock Hill was replaced on the 24th January with a Yaesu DR-1X C4FM repeater. The frequencies are unchanged - repeater TX 433.125; RX 434.725. No access tones are required - it is carrier only operated.

The ID is the same, EI7WHR at 16 wpm CW. The selected mode is Automatic Mode Select (AMS) i.e. normal analogue FM voice input to repeater, normal analogue FM voice output. Digital voice input to repeater, digital voice output. Reports are welcome.

The club now operates two Yaesu DR-1X C4FM repeaters, the 70cms on Woodcock Hill and the 2m on Tountinna which is also on Automatic Mode Select.

The photo shows the 70cms Repeater on top shelf, below it is the duplex filter with a spare PSU, trickle charger and battery on the bottom shelf.

## Shannon Basin Radio Club

### Brian Canning EI8IU

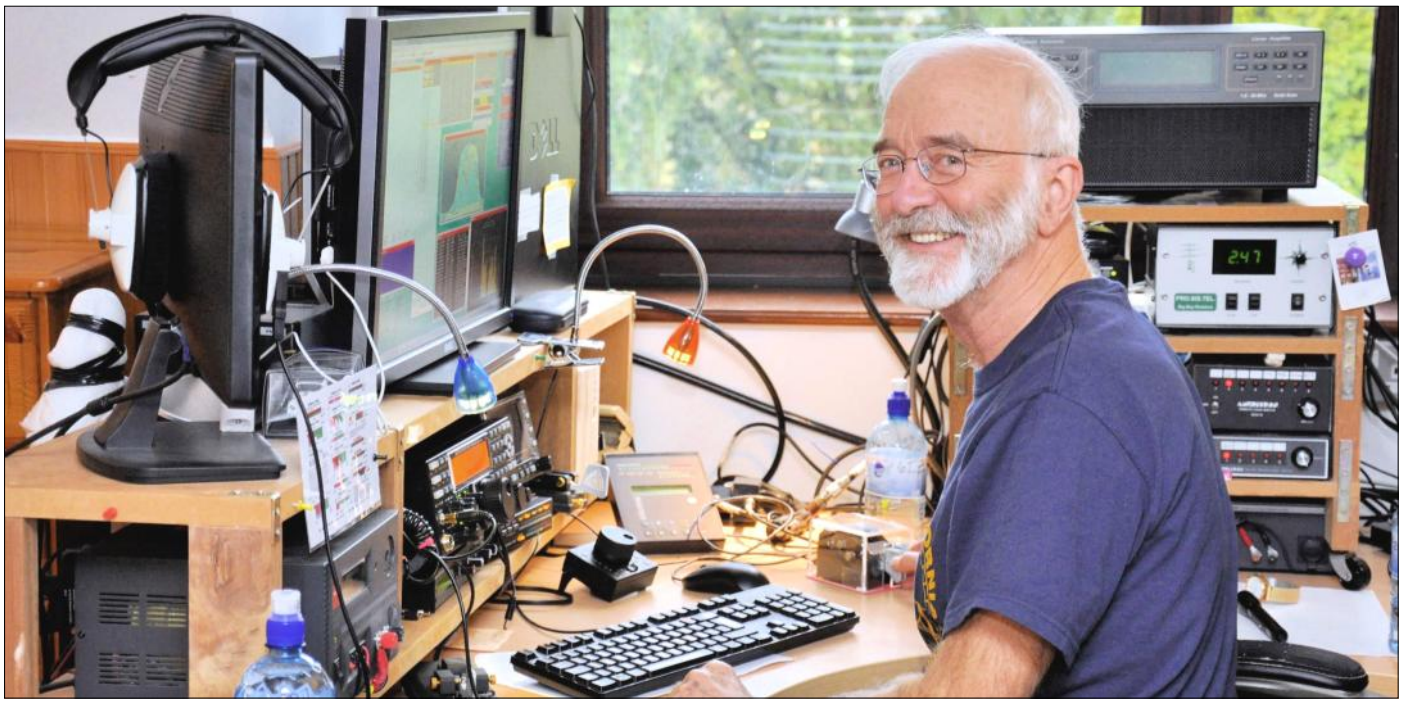
The Club recently held its AGM in Roscommon.
The following committee was elected;

Chairperson EI9HX Pat
Secretary EI8IU Brian
PRO EI9HX Pat
Joint Treasurers EI6IB Fergus and EI8IU Brian
Contest Manager EI6JK Mark
QSL Manager and Webmaster EI6GGB Anthony

The club would like to thank the outgoing committee. Several topics were discussed including contest participation, logging software and antenna construction. Keep an ear out on the bands for the club members using the Various Wild Atlantic Way calls.

The club intends holding theory classes in the near future. Anyone wishing to take part in these classes can contact Pat EI9HX 087 676 7707 or Brian EI8IU 086 105 7325 or see *shannonbasinradioclub.com*

*Fergus EI6IB Mark EI6JK Pat EI9HX Brian EI8IU Stewart SWL Hannah SWL Anthony EI6GGB Paul SWL Richard EI5GUB.*



*Doug EI2CN on the key from EI0R during the 2017 CQ WW 160m Contest*

# Excerpts from the HX files

## Pat Fitzpatrick EI2HX - Excerpt 038

*Hello and welcome to Xtract 38 of the HX files.*

In this issue of Echo Ireland I would like to talk about a couple of tests done on a cold Sunday afternoon in January. Not having a project to show you this time, I have been experimenting with a couple of laser pointers and seeing how far I can get the dot on a wall, but more of that in the next HX Files!

After a short trip to a nearby high point a couple of tests were done to get my antenna aiming skills back. Before I left my home the receivers were switched on and put through a video set on long play record in the hope of receiving some pictures of the events of the day. Not having a nearby experimenter available on the day, the hardest job was not radio related, but a family related one. That chore was to persuade my brother to go upstairs and switch leads from the 23cms and 10GHz receivers into the front of the TV as I use a small combi TV/ video recorder.

Having shown the brother what leads to swap, a short trip was made to the site, and after a while setting up everything, (now you know why the video recorder was put on long play record) some transmitting was done on 23cms.

I used a GPS to tell me where to point the aerials as my home could not be seen from the test site.

In photo 1 you can see the pieces of equipment being used in the tests before all the leads got connected; main items in the picture are a couple of 23cms ATV transceivers and a 10GHz transmitter. So after transmitting for a couple of minutes a phone call was made to the brother it went to voice mail (twice). After a couple of well-known expressions I rang again and he answered.

After a couple of minutes using the Armstrong rotator and my phone on speaker he started to get some sort of a picture, in ham terms first a P2, as the brother's terms would not be passed by the editor's strict rules for Echo Ireland unless you only read this journal after the 9 pm watershed. It was only a couple of moments before a P4/P5 was (I hope) being received going by his terminology. He was receiving the picture of the test card I was sending. I asked him to give me 10 minutes and come back up to the shack and change the leads to the 10GHz setup. In those moments I tried a couple of different aerials such as a circular polarized and a slot one.

.

Next experiment was on 10GHz. Having the 23cms and 10GHz on the same mast was a major help as it only took a small movement to capture or lose a picture. This test was done first with a small horn type aerial and then the dish. Whilst locking the aerials on the mast and tripod it was not hard to have a small movement and lose the signal, so that when I got back home there was not too much P5/P4 10GHz video to view. Back on the hill my experiments had not gone unnoticed as a couple of dog walkers came over to ask what I was doing and was I from RTÉ. After a couple of moments I asked one of them to take the camcorder and to film me and my little badge that you might just be able to make out in photo 2.

In photos 3 and 4 you can see other stills from the testing done on the day.

Photo 3

*Photo 4*

Back at home the equipment used was the usual 23cms receiver linked to a slot aerial and on 10GHz it was a converted LNB connected to an old analogue satellite receiver.

That's it for this issue of Echo Ireland, and I would like to thank the fellow dog walker for his help and also my brother, (although he did get a beef curry with fried and boiled rice for his hardship).

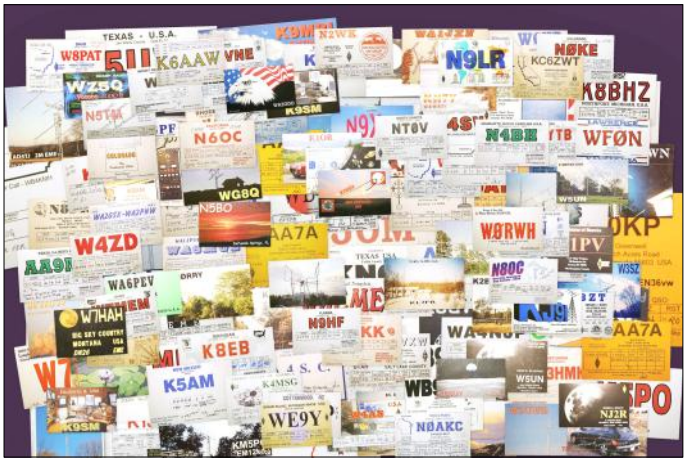
May all your signals be P5.
73 Pat.

*Photo 1*


*Photo 2*

# Chasing the 2m Worked All States Award

## Tom Cocking EI4DQ


My 2m EME station is located in Co. Cork. Generally I use CW, JT65B and SSB for the contacts. Below are photos of the operating position in my station and the antenna system. When I completed my 144MHz DXCC in 2010 I thought to myself that I must have close to the 50 USA states needed for the ARRL WAS Award.

My earliest contacts with the United States date back to 1992. After checking , I found that I needed just four more states, Hawaii, Nebraska, Wyoming, and Rhode Island. So my next task was to hunt for the missing states. Hawaii was worked in August 2012 with KH7Y. Nebraska in November 2014 with K1MEA, Wyoming in May 2015 with KB7Q and Rhode Island in May 2016 with N1NK.

Of the fifty states, twenty none were worked on CW and twenty one on JT65.

The most difficult state to work was Rhode Island. Jim N1NK just uses a 2-yagi station and only comes on for a short time when he is not busy on his farm! He is the only active working EME station in the state. In twenty five years he is the only station from that state that I have heard. Surprisingly, North and South Dakota were quite easy to work.

I received my ARRL Cert no. 202 on 5th December 2016 and I'm now concentrating on the low bands for DXCC.

*Editor's Note: Congratulations to EI4DQ on a magnificent achievement.*

## Renew your IRTS Membership

Use this link to renew your
membership for another year

**www.irts.ie/renew**

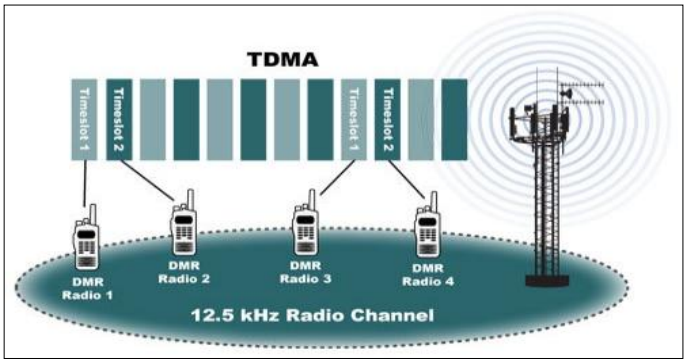
Payments are processed through
PayPal's secure servers, and any credit card may be used

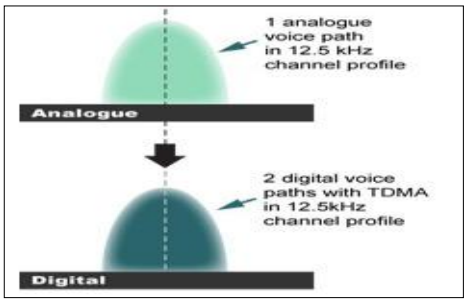
# Getting Started with Digital Radio - Part 1
## Steve Wright EI5DD

In an attempt to produce a short lecture on digital radio for the Galway VHF Group, a considerable amount of material was researched to discover the basic operation of the DMR and Yaesu System Fusion (C4FM) that are rapidly increasing in popularity via repeaters, gateways and complex networks connecting to all countries in around the world. In a very short time there will be two or three digital repeaters and two digital gateways operational in Ireland along with many already established in Northern Ireland and not forgetting the Yaesu Fusion repeaters in Donegal and Limerick.

Consequently, the activity on digital radio will increase and this article is intended to give a basic understanding of what digital radio is all about for those entering this new and exciting era. The material presented here is gathered from many sources which are referenced at the end of the article.

A talk will be given by John Anderson MI0AAZ and Dave Randles M0AUT on the Brandmeister Digital Network and, if time permits, Yaesu Fusion at the Saturday lecture session prior to the AGM dinner. There will be plenty of time to ask questions at this meeting.




### DMR Radio System

DMR uses two-slot 12.5kHz time-division multiple access (12.5kHz TDMA). This is not compatible with the FDMA mode. 12.5kHz TDMA is a globally recognized, approved standard for the professional two-way radio market which is used in the amateur environment also. DMR TDMA is configured to provide 6.25kHz equivalent efficiency in an existing 12.5kHz channel.

12.5 kHz TDMA methods for achieving 6.25kHz efficiency in the 12.5kHz channels offer:

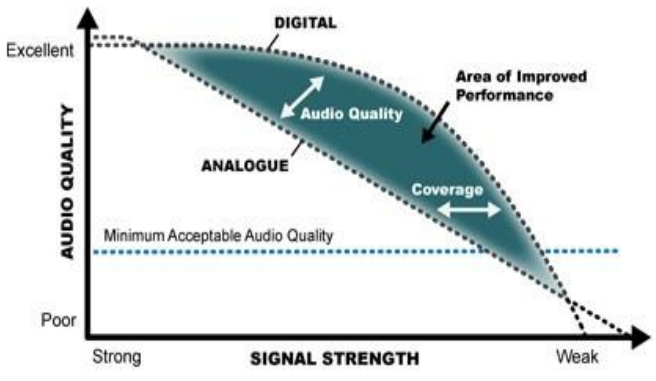
- Twice the transmission capabilities, with decreased spectral congestion. In contrast, a 6.25kHz FDMA approach doubles the number of RF carriers and in the process increases the likelihood of interference with existing systems.
- Increased performance, reliability and functionality, while improving battery life by up to 40 percent compared to analogue radio.
- Two virtual channels that can be adapted on the fly to meet a wide range of needs, including increased capacity for voice calls and wireless data access, or for advanced control signalling during a call.
- Standards-based platform, as 12.5kHz TDMA is the recognized standard for professional and commercial two-way radio market in both Europe and the United States.

The two-slot TDMA implemented in DMR uplinks (portable/ mobile to repeater) uses a 30ms window for each time slot, the 30ms time slot is further divided into a 27.5ms frame and a 2.5ms gap. This means that, when transmitting the transmitter is only turned on for 27.5ms for every 60ms. This basically means that the transmitter is transitioning from transmit to receive every 27.5ms. This represents a 40% extension in battery life for handheld radios. On pressing the PTT the transceiver will transmit a 27.5ms frame. If the repeater is busy on the time slot in use, it will not acknowledge the transmission and the transceiver will emit a beep and remain in standby.

If the radio is set to receive Time Slot 1 it will not receive Time Slot 2 and vice versa. Two conversations can therefore take place on a the same 12.5kHz channel and not cause any interference to each other. This means that a repeater can operate on two channels using the same hardware such as transceiver, cavity filters, antenna, and control circuitry. This is obviously a huge saving. Two repeaters for the price of one.

DMR provides enhanced voice communication. When signal strength drops off with distance from the transmitter, analogue signals become distorted, producing audible static as signal strength degrades but digital signals may provide communications further out but they eventually break up much like mobile phone signals in poor coverage areas. Digital signals are either there or not there.

As is shown in the diagram below, the audio quality remains good with no degradation of signal until the signal strength reduces at the fringe area of reception. Analogue FM will be



barely audible but it is still possible to understand the message within the noise.

By contrast, digital receivers use digital error correction technology to correct anything interpreted as an error in a signal. If the error cannot be corrected, then the signal is simply rejected. With digital error correction technology, audio quality is more consistent across a given coverage area, resulting in clearer voice communications throughout the coverage area, as compared to analogue. This helps ensure the message gets through clearly.

DMR also features background noise suppression to help ensure communication comes through loud and clear. The static and noise rejection helps you to hear better in noisy environments.

## DMR Terminology

**Registration** is required before one can use a DMR radio. It is necessary to acquire a unique DMR I/D number before one is able to transmit. The unique I/D number is available from *https://register.ham-digital.org* The radio will not work without it.

**Talk Groups** are a way for group of users to share a time slot without distracting and disrupting other user for the time slot. It should be noted that only one talk group can be using a time slot at a time. If your radio is not programmed to listen to a talk group you will not hear that talk group's traffic. There are talk groups implemented for various countries or areas with in those countries. Currently there is an "Ireland" talk group covering mainly Northern Ireland but it will be slowly populated with repeaters and gateways in South. In the UK there are talk groups for various areas of the country with individual talk groups to take the pressure off if they become busy.

In general try to use talk groups that tie up the fewest number of repeaters if you intend to have a long QSO with a friend. Not a huge problem on the Ireland talk group at present, but it won't be quiet forever once the interest escalates.

**Zones.** A zone is a grouping of individual channels. Some radios may limit the number of channels per zone and may also limit the number of zones allowed. Zones may be programmed for local channels (either DMR or Analogue) or perhaps for a neighbouring area or country. In the case of the UK one could have a zone for each region.

**Colour Codes** (CC) are used by DMR repeaters, much like DTMF tones are used for analogue repeaters. There are 16 different CCs - CC0 - CC15. The use of colour codes is not optional on a DMR system. If the colour code is not set correctly, it will not be able to access the repeater. The real purpose for using different colour codes is when multiple repeaters operating on the same frequency have overlapping coverage areas.

**Code Plugs** are simply a radio's configuration file although there is nothing simple about them. Using a manufacturer's programming software, it is possible to configure the channels and operating parameters of a radio. This file is then uploaded to the radio and should typically be saved on the computer as a backup. It is possible to download a code plug, suited to your area, and modify it to suit your needs. Building a code plug can take hours if one wants to program hundreds of channels - some radios can take up to a thousand channels. It is often better to use a pre-programmed code plug common to your own area. At least all the settings will be common to other users in the area. A useful code plug may be found on the Galway VHF Group Facebook page. It does contain many Northern Ireland repeaters but it can be added to over time. There are no other digital repeaters in Ireland.

**Scanning.** All DMR radios allow the programming of scanning of channels. Remember it is only possible to receive traffic on the frequency, time slot and groups you have programmed on a channel. It is a good idea to scan both time slots on a local repeater and a simplex channel. It is possible to scan analogue channels as well. Remember scanning will reduce the battery life of the handheld radio.

**Roaming** is **not** scanning. Roaming is similar but different. Roaming is designed to have your radio automatically select the best channel if your current channel's receive signal strength indicator (RSSI) falls below a defined level as you move throughout the coverage area of a group of repeaters that carry the same talk groups on the same time slots. You should select channels that have the same time slot and receive groups configured; if you do not, roaming may not work correctly. Repeaters can be configured to transmit beacons at predefined intervals of inactivity so roamers will be on the correct channel. Without the repeater beacons, roaming will still work, but the radio will only change channels if it hears a repeater on the air. Roaming may not be an option on all radios.

**Simplex.** This allows a direct communication between operators. See appendix for IARU Region 1 designated simplex channels. It should be noted that there is NO regulation governing the use of the standard FM analogue simplex channels IARU Region 1 and the RSGB band plans state that the S channels are for digital and analogue use. Obviously is in not good manners to use established net channels in such a way.

**Admit Criteria** determines when your radio is allowed to transmit. The recommended setting for repeater channels is Colour Code Free; this configures your radio to be polite to your own digital system. You should configure your In Call Criteria to Follow Admit Criteria. Simplex channels should be configured as Always for both Admit Criteria and Always or Follow TX for In Call Criteria.

**Accessing a DMR Repeater**

When you want to access a DMR repeater, you must have the frequency, colour code, and talk group set correctly. When you key your transceiver, you send a signal to the repeater and the repeater responds back to you to acknowledge you can transmit your message. If you do not receive the repeater's acknowledgement, your radio will stop transmitting and you will hear a negative confirmation tone. This is one of the advantages of TDMA: allowing bi-directional communications between user and the repeater when transmitting. The repeater can signal your radio to stop transmitting if there is contention on the network because more than one station is transmitting at a time. Not all DMR repeaters are interconnected on the internet as internet connectivity may not be available at the repeater site, or not available at a reasonable cost. Some repeater operators may

prefer to keep their repeater for local usage only, or maybe only want it connected to a small local/regional network, without connecting to the larger world-wide networks.

## DMR Operating Procedures

It is necessary to connect to a talk group first.

1) Press the menu button
2) Confirm the highlighted "Contacts"
3) Scroll down to manual dial, confirm, and key 4404 for the Ireland talk group
4) A quick press on the PTT should result in a voice message "connected to 4404"
5) Do the same process as manual dial and delete the 4404 using the button on the right hand side. You are now ready to make your call or use the 4404 talk group.
6) When finished perform 1 - 3 but key in 4000 and momentarily press PTT and a message saying "not connected" will return.

When you make an initial transmission to announce your availability, to place a call to another station, or to make a general call, you should also announce what talk group you are on because some users may be scanning or have radios without a display.

Please avoid calling CQ, CQ, CQ this EIXXXX - DMR is not HF and operating DMR over the network is not DXing. When you are talking on one of the wide area talk groups, hundreds of repeaters will be tied up. If you are unable to move to a more localised talk group, be considerate of the other users on the network. Talk groups share time slots. When one talk group is active, other groups on the same time slot will be blocked. Leave space between transmissions, usually count to five before pushing the PTT so others can break in.

Remember that emergency traffic always has priority over all other traffic. Examples of good operating practice for initial calls on the DMR networks include: "This is EIXXX listening on the Ireland talk group for **any call**" Make the call specific as in This is EIXXX calling EIYYY on the Ireland talk group or 4404. One may be on any talk group so say EIXXX listening on whichever talk group for **any call.** This will assist the operator who may be scanning.

What ever you do, DO NOT go on to a talk Group and say this IS EIXXX listening on XXXX talk Group. **Most operators will be happy enough not to spoil your listening pleasure by calling you should you say this.**

Do not hang up a **World Wide Talk Group** (with many repeaters connected) with long overs. Bring the conversation to a quiet location (chat area or reflector) for general chat.

Above all **do not** hang up any talk group with an **Echo Test.** You will be very quickly put in your box for doing this. If you got a connection to a talk group, it is working. You give your call-sign followed by listening for any call or maybe make your call specific for an individual. This will always result in a reply. Favour live reports over talking to yourself. Don't forget to disconnect if you are finished monitoring or calling through the network.


*TYTera MD-380*


*Motorola DM4600*

Normal QSO protocol applies at all times.

Pressing the PTT will result in your I/D number or call-sign coming up on the screen of any transceiver monitoring the channel. You will be identified even if you don't speak.

## Available Equipment

**DMR Equipment**

Most of the cheaper handhelds are clones of the **TYTera MD-380** (pictured next column). These are readily available in UHF versions with some available on 2m.

Motorola equipment such as the **Motorola DM4600** (next column) is expensive. Take caution as the distance covered on UHF is subject to reflections and a diminished range. Some of the cheaper rigs such as Baofeng and Wouxun claim to be tier-2 compatible but generally are not; do research before going for the cheaper option. Read reviews first.

**Local Hotspots**

These are small devices that may be single band or dual band running less that 10mW with connectivity to the internet either via a desktop, laptop or Raspberry Pi computer. Connectivity may be via Ethernet or Bluetooth.

There are many devices available allowing access into Yaesu Fusion, DMR and D-Star networks. These include the following:

**DV4Mini:** A simple dongle that may be plugged into a desktop, laptop or Raspberry Pi. It may be set up for one of the three modes only and can be purchased for operation on 2m or 70cms. The easiest method is to use a Raspberry Pi and connect to it via a laptop. Once connected it is possible to set the parameters and mode of operation. When the set up is completed it is possible to disconnect the laptop from the Raspberry Pi and leave it connected to the internet to work away by itself. A cheap starter into digital.

**DVMegga Bluestack:** An exceptionally versatile system that can be connected via an Android phone or tablet via bluetooth. Internet connection can be via the phone's data connection or via the home WiFi connection. The set up can be done from the mobile phone screen or an Android tablet. Once the frequency is selected and all information is added, connection to the internet is possible. It is then possible to select which digital area you wish to operate - DMR,

Fusion or D-Star. If any station should connect, their details will be displayed on the screen of the phone or tablet. Once set up this system can be left to run by itself giving coverage around the immediate area of the house.

**Shark RF Open-Spot:** Another system available on the market. Setup has to be performed via an ethernet cable which is a nuisance. It is relatively easy to set this device up but it requires an ethernet connection to the router. Programming is awkward as each parameter has to be entered and saved before moving on to the next setting. Once over this obstacle and all is programmed and functional, it will run away in the background without a computer.

**MMDVM** modem boards are a versatile system allowing experimentation with localised gateways and can be interfaced with many transceivers configured to allow digital transmission. These may be incorporated into repeaters or configured for gateway operation.

## Digital Simplex Channels

| | UHF | VHF |
|---|---|---|
| DH1 | 438.5875 | 144.8125 |
| DH2 | 438.6000 | 144.8250 |
| DH3 | 438.6125 - Calling Channel | 144.8375 |
| DH4 | 438.6250 | 144.8500 |
| DH5 | 438.6375 | 144.8625 |
| DH6 | 438.6500 | |

***N.B. Digital transmissions may be made on any UHF or VHF FM simplex Channels***

Colour Code = 1
Talk Group = TG9
Admit Criteria = Always
In Call Criteria = Always

Remember when you put your call out to state which simplex channel you are calling on as this will allow anyone who has their radio on scan to know what channel you are TX on because if they do not press their PTT within a couple of seconds their radio will drop back into scanning mode and they will have to wait until you transmit again.

A DMR code plug for the Ireland network is available from:
*https://www.facebook.com/groups/481183598723548/*

This site is also of relevance to anyone operating digital modes in Ireland.

**Hotspots at home** can be set on any FM frequency or one of the digital simplex channels

**Galway Digital Gateway** **144.850**
(currently awaiting an appropriate callsign)

**Mayo Digital Gateway** **144.825**
(currently awaiting an appropriate callsign)

## References and Sources


**DMR Diagrams and explanations**
*gb7dd.co.uk/what-is-dmr*

**Google -** Yaesu Digital Communications Guide

Additional material throughout from:
**An Amateur Radio Guide to Digital Mobile Radio**:
*raqi.ca/~ve2rae/dmr/Amateur_Radio_Guide_to_DMR.pdf*

**TAIT Radio Academy**:
*taitradioacademy.com*


If anyone has any queries or requires more information or recommendations for equipment they should feel free to contact the author at *wrights1@eircom.net*, who assures the Editor that he will reply promptly.

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**IRTS AGM Weekend, Dundalk**
**Talks on Saturday afternoon - 8th April 2017**

John Anderson MI0AAZ, supported by Dave Randals M0AUT and Stefan Pynappels MI0PYN, will give a presentation on the operation of DMR and Yaesu Fusion using MMDVM hardware and software connected to the Brandmeister digital network. The development of the Brandmeister network in Ireland will also be reviewed.

Dave Deane EI9FBB, on his recent return from the upcoming 9N7EI DXpedition to Nepal, will summarise what is expected to have been a very successful trip. The Dundalk Amateur Radio Society has particular interest in the EIDX Group's adventure to Nepal. Thos EI2JD, a society member, will be the official photographer in addition to his operator duties Also part of the team is Hugh EI9KF, secretary of the society. Alain EI2KM is the French Connection travelling also, and a good friend of society members for some time.

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Older readers may recall Fr. Marshall Moran SJ who operated from Nepal as 9N1MM (9N1 Mickey Mouse) and whose call was familiar worldwide from the 1960s to the 1980s. Fr. Moran was born in Chicago in 1906 and died in 1992. He made almost 300,000 contacts from Nepal and assisted essentially every visiting ham to get on the air.

While not on the air, Fr. Moran ran the St. Xavier school with its 260 students. For some time he was the only licensed amateur in 9N because of his friendship with the King whose son attended the school. *Editor - thanks to Alan EI3CG / WA7KBN for the information and photo.*

# IRTS Publications Library

**Joe Ryan EI7GY**

Following a suggestion made by a member, we are developing an online library of IRTS newsletters and other relevant publications. The Publications Library *irts.ie/library* has PDFs of 120 newsletters over the period 1966 to 2000, along with call books and yearbooks.

Looking through the material in the new library, I found myself drawn firstly to the **1967** newsletters to see what was happening in amateur radio half a century ago. (By the way, thanks to Alan EI3JK for the loan of the 1967 issues.) The February newsletter includes a report on one of the first moonbounce QSOs on two metres between USA and Australia.

The same issue included accounts of the eight EI stations active during the JOTA Weekend – a great turnout, considering there were fewer than 300 EI licences in issue at the time. It is worth looking at the February 1967 issue if only to read a poem by the late Bernie O'Sullivan EI6AX entitled "The Old Man of the House", a parody of Padraic Colum's "An Old Woman of the Roads"; it will make you smile!


*Newsletter cover from 1967*

The focus in the six issues published 50 years ago was on *activities* rather than *construction*. Some small construction projects were included – a diode-based noise blanker and a few projects based around germanium transistors – AF and RF amplifiers, a BFO unit and an S-meter. The contest news in the 1967 issues included a report on a 4 metre contest in July (an RSGB event, perhaps?) for which a group of hardy Limerick operators hauled their home brew gear, a 5 element beam and a generator up to the Graves of the Leinstermen, overlooking Lough Derg. Just two stations submitted logs for National Field Day (CW field day) that year, described by the contest manager as "a disappointing response". Being the current holder of that office, I can empathise with my predecessor of 50 years!

There is a 20-year gap in the library's newsletters after 1967, but nearly all newsletters from **1988 to 2000** are there. 1988 was Dublin's Millennium Year and IRTS was playing its part by operating a 'Millennium Station' EI1OOO on 17th March, one of its aims being to contact stations in other places around the world with the name 'Dublin'. It's not clear from the reports of this event how many Dublins were contacted, but the operation – based in the GPO – and other Millennium special event stations later in the year do appear to have succeeded in highlighting amateur radio to a wider public.

As well as reporting on current amateur radio activities, the newsletters from the late 1980s included some very useful articles on propagation (the late Con Hunter EI9V shared his expertise on *HF propagation*, well worth reading) and a few construction articles – typically using CMOS or TTL integrated circuits. There was also a series of articles on *satellites*, amateur and otherwise, by Tom EI3ER and an *SWL Topics* column by Ciaran EI1012 – now EI8IH – mostly dealing with broadcast stations. (Re-reading Ciaran's columns over the past few days, I was reminded that broadcast radio was a major conduit for propaganda and disinformation until fairly recently, the same function now performed by social media.)

By the late 1980s, computers were beginning to get occasional mention in the newsletter, particularly in relation to packet radio and BBS (bulletin board systems). PC contest logging gets its first mention early in 1990, with an announcement about a contest logging program developed by Paul EI5DI (Paul's SD contest logger is still on the go, twenty -seven years later).

The technology we have at our disposal in this century may be far more advanced that was available to amateurs in the past, however the fundamental skills and challenges that make amateur radio an enjoyable hobby have not changed. So, the material published many years ago about propagation, antennas, operating procedures and lots more is as relevant and useful now as it was when it originally appeared.

The Publications Library provides plenty of reference material on amateur radio activities during the last century. For anyone interested in the history of amateur radio in Ireland from the very early experiments in the late 19th century up to the 1970s, a paper entitled "A Short History of Amateur Radio in EI", prepared by the late Bill McIlwaine EI9F, was serialised over nine parts in the newsletters from September 1990 onwards; well worth a look.

We would like to make the Publications Library more complete by filling in the gaps in our collection; does anyone have copies of IRTS newsletters prior to November 1966 or for the period 1968 to 1987? If so, Séamus EI8BP or myself would like to borrow them for scanning.

# HF Happenings
## Anthony Murphy EI2KC

Hello again to all of you and welcome to HF Happenings, the column where a slightly nutty fellow who encloses himself in a corner of his house and taps out five characters in morse code repeatedly, for hours, into the ionosphere, in the hope that his signal is heard on some faraway rock, tells other similarly nutty fellows all about the experience, in the hope that this somehow entertains them.

Well, this radio nerd has, unfortunately (fortunately for most of you), reached the end of his tenure as author of the HF Happenings column. I wrote my first HF Happenings in April 2011, so I've been at it for about six years. It's been great fun, and the fact that I had only been licensed in 2009 meant that I was writing about HF and DXing in the early days of my life as a radio amateur, and all the hard work, persistence, excitement, and sometimes disappointment, that chasing DX entailed. Although even back then, in April 2011, I had already worked 211 DXCC entities, and all that had been achieved with 100 watts and simple antennas – a Butternut HF6V, an Antron 99 and a dipole for 30 metres. I had worked 198 countries on CW, 152 on phone and just 59 on digital modes. Not bad for a year and a half of fun on the bands… Here we are six years later (doesn't time fly) and I have worked a total of 320 current entities (323 total), 317 on CW, 298 on phone and 183 on digital. I have worked enough countries to claim DXCC from ARRL on eight bands in addition to the Mixed, CW, Phone and Digital DXCC.

However, I still haven't claimed them – mainly because it's expensive and with a growing family of harmonics, there are other financial priorities! I have 303 DXCC confirmed on CW alone, and 279 on phone. My best band is 20m with 284 countries confirmed. And even now, with only 19 DXCC left to work, I still find there are plenty of band slots and modes to be filled, so there's always something to chase. Unfortunately, the number of "new ones" dwindles as time goes on. I haven't worked a new DXCC in ages. The last new one I worked was FT4JA Juan de Nova on April 1st 2016. That's nearly a year ago.

While the antennas have improved a bit since I first wrote HF Happenings (I've since added 40m and 80m dipoles and a hex beam) and I also have an Acom 1000 linear amplifier, the time available to play radio has dwindled. It's actually got to the stage where I can go for a week, ten days, and sometimes a fortnight without even switching the radio on.

For someone who is writing a column about HF and DXing, that's not really enough activity to warrant my position. Looking back through my log for the past winter, I see that I only made four QSOs in the whole month of December. And January was a fairly lean month too. Granted, solar/ propagation conditions have been poor, but that hasn't prevented me working some nice DX. The problem really relates to a lack of time. In the background, in addition to being heavily involved in music (on a voluntary basis), I am also trying to write another book, and even that is not happening due to time pressures. Primarily one has to work, and earn a living – everything else gets squeezed in around that.

Anyway, I've thoroughly enjoyed the experience. It has been a combination of fun and frustration – the challenge of DXing from a small garden is one I am very familiar with. However, breaking through the enormous pile-ups for top 20 rare DX entities is always a great pleasure. Sometimes it happens quickly and easily, and at other times it's like trying to break into Fort Knox with a spatula. It's a hobby that certainly tries the patience at times. I'm not a big fan of travelling. I like home. And yet, with the amateur radio world map on the wall in front of me, I am reminded that I have, in some ways, been all around the world. My radio signal has been heard in some of the most inhospitable, hard-to-reach, obscure places on this extraordinary planet of ours. Many of these are, almost literally, rocks that jut out of the oceans. I think about places like Pitcairn Island, with its extraordinary history, and where all of its 50 inhabitants today are descended from the crew of the HMS Bounty.

The nearest you are to civilisation on Pitcairn is 3,500 miles – to New Zealand. There is no airport and there are no planes. Supplies are brought from New Zealand by boat every few weeks. What a singularly remarkable place. We turn on the radio and can (generally, depending on conditions) hear huge numbers of stations from our European neighbours. Out in the lonely Pacific, it's a much different story, as Alain F8FUA recounted recently when he told me of a recent one-man DXpedition to Chatham Island ZL7. Conditions were atrocious. He had some VKs calling him and then a run of Japanese stations, but once they dried up he was unable to make QSOs, sometimes for hours on end. It must have felt like the loneliest place on earth.

Likewise I think about other far-off isolated or hard-to-reach places such as South Sandwich and South Orkney, those icy lands in the far southern oceans, where only the very hardiest human beings dare to go. Or those places that are dangerous because of their political situation – places that we never thought would be activated came on air – the likes of Somalia, Yemen and Eritrea. Even North Korea!

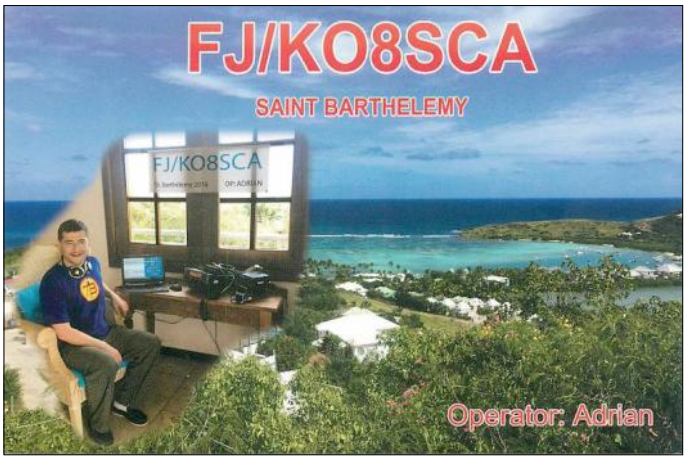
And I think a lot about Africa. Perhaps because it's the continent with the lowest number of indigenous licenced radio amateurs. Maybe it's because so many of its countries are poor, and war-ridden, and lacking in basics like clean running water. There are huge swathes of that continent that are barely habitable, and scorched and burnt, and yet every single country on the continent of Africa is, perhaps miraculously, in my log.

Anyway, before this begins to sound like a retirement speech, I should just say that I've enjoyed the hobby, and in particular DXing. I hope to continue to enjoy the hobby, but as with all hobbies, they are not meant to be taken too seriously. Family comes first, and the business of running the household and paying the bills is always of primary importance. And as I always say, the ham licence is a lifetime licence. One does not have to give it all up. But one does have to be conscious that it does not occupy so much time as to be detrimental to other things.

**Recent DX**

Despite my apparent hiatus this past winter, there is still plenty of DX in my log. Since my last column, some decent bits and pieces have been worked, and some confirmed thanks to Logbook of the World. Here is a quick highlight. I had a QSO with 5H3BM Tanzania on 30m CW – new country on 30m; this was followed by QSOs with 5H1WW on 17m and 15m CW. I love working Africa. It's such a vast and fascinating continent. In November I had a QSO with VK6ANC and was delighted recently to see Thos EI2JD visiting the Northern Corridor Radio Group station at the Neil Penfold State Amateur Radio Centre. According to a post on Facebook, there are a couple of former Irish hams in that group too – VK6NU John, who is from Cavan, and Tim VK6EI who is from Tramore.

FJ/KO8SCA St Barthelemy was logged on 20m CW; 3B8/DJ7RJ in Mauritius on 17m CW; V26K in Antigua and Barbuda on 15m CW; VP2V/K2SK in the British Virgin Islands on 20m CW and later confirmed via LOTW; VP2EHC Anguilla on 17m CW and later confirmed; 9Y4/VE3EY on 80m CW during the CQWW contest and I was back to old habits there because it was the CQWW contest in 2012 that got me over the "100 DXCC confirmed" mark on that band; FY5FY in French Guyana was another new one on 80m that weekend, followed quickly by 5Z4/DL2RMC in Kenya.




Actually, those three new ones on 80m were all worked in the space of about ten minutes at around 2.30am! If memory serves me right, I had just returned home from helping the EI0R team in that contest and found these three stations audible and workable. Nice one. I have a particularly soft spot for Kenya, where my late aunt was a missionary nun for a few years in the inhospitable Turkana desert region during the 1980s. Sister Presentina Murphy, my dad's sister, was a Medical Missionaries of Mary nun (they were based out of our home town of Drogheda). These nuns did remarkable work in Africa, in the most unimaginable heat and drought, and helped ease the suffering of tens of thousands of people there.

Staying with Africa, I worked 5T9VB on 30 metres RTTY, which was a new one on 30m digi modes; VU2RBI (India) was worked in late November on 17m phone; ZD8V on Ascension Island was logged on 15m CW and confirmed; 5R8IC on Madagascar was logged on 20m phone; FH/HB9AMO on Mayotte, not far from Madagascar, gave me a new country on 40 metres and later followed up with the LoTW QSL; back to Mauritania (did I say I love working Africa?) and I logged 5T5TI on 20m and 17m SSB, both late confirmed; our own Dave EI9FBB and Jeremy EI5GM were part of the A70X team that activated IOTA AS-088, Al-Safliyah Island off Qatar, for a few days in the early new year. I was delighted to work the team twice, on 15m CW and 17m SSB, both QSOs later confirmed.

Also in January, I worked Nodir EY8MM in Tajikistan on 80m CW at 11.30pm one night and was surprised to find I hadn't worked Tajikistan on that band before. Another continent I love working is Antarctica, primarily because of its distance. There are plenty of research stations down there at various times of their summer (our winter). One such station is RI1ANC, the Vostok Base, with op Alex RD1AV on the key. I logged Alex on 17m CW one morning. It was the seventh QSO I'd completed with RI1ANC. By the way, for those of you who don't already know, the official DXCC designator for Antarctica is KC4/A. Andy VK5MAV was logged on 15m CW one morning and I was surprised to find he was stronger on the short path – usually Australia is better on the long path in the mornings; DU1KA in the Philippines was logged on 17m CW simplex through European QRM at 10am one January morning.

James FR4PV on Reunion Island gave me the pleasure of a QSO on 17m SSB; ZF2PG on Cayman Islands on 15m SSB; TU5MH in Ivory Coast on 17m CW; Leo EX8VC in Kyrgyzstan gave me a new band slot on 20m SSB; TU5MH was worked on a few more slots, including 40 metres CW, which gave me a new country, and also a new slot on 30m CW; in early February, yet another African DXpedition kicked off, this time to the Central African Republic, using the call sign TL8TT. I worked them a total of 11 times, and was delighted that they gave me a new one on both 80 and 40m, and a new slot on 30m CW; EP2C in Iran was worked twice in one day, on 20m phone and CW; then yet another African DXpedition began, this time to Guinea, with the call sign 3XY3D. At the time of writing, I had worked them on four slots. Actually, make that five. I've just worked them on 30m CW!

One of the toughest DXCC I've worked is XX9 Macao. The recent XX9D DXpedition proved how difficult it is. Due to terrain the paths from Macao are not good, but that did not prevent me logging them on 17m CW one day after about two hours trying. And who said I was retiring? ST100S was a special event station for the Scouts in Sudan on 20m SSB. Those are the highlights of my log. I'm sure some of you have even more interesting DX in your log.

**Forthcoming DX**

**9N7EI Nepal**

The most exciting item for Echo India under the "forthcoming DX" heading is undoubtedly the forthcoming 9N7EI Nepal activation, by twelve members of the EI DX Group. The team will operate for ten days from high above Kathmandu. The QTH is 6,000ft above sea level, with spectacular views in all directions. "We now have the clear path we were looking for towards North America and Europe", a team spokesman told DX-world.net. All going well, 9N7EI will be on the air from March 8th to 20th. *9n7ei.com*


**3B7 St. Brandon**
The DX Italia bulletin by I2MQP reports that rumours are circulation about a possible French operation from Saint Brandon (3B7) in October 2017. No further information is given. 3B7 Agalela and St. Brandon Islands is currently the 41st most wanted DXCC on Club Log's top 100.

**ZF2 Cayman Islands**
Fred, K5QBX and Royce, KE5TC will be active from Grand Cayman as ZF2FL and ZF2TC between March 20th and 27th, 2017. QRV vacation style on CW/DIGI/SSB..

**A35 Tonga**
Masa, JA0RQV will retry to activate Niaufo'ou Island OC-123, Kingdom of Tonga as A35JP/P between 22th and 28th March 2017. His Majesty Armed Forces of Tonga (NAVY) will officially cooperate this activation by transporting Masa to OC-123 as their personal mission. Masa's trip to OC-123 in October 2016 had to be postponed due to an issue with flights. IOTA hunters will be particularly interested in trying to nab this rare one.

**9M4IOTA West Malaysia**
This nice call sign will be aired by the Kuala Lumpur DX Team (KLDX) from March 3rd to 5th, from Tioman Island AS-046, West Malaysia. They will be QRV from 10 - 80m on SSB, CW and digital modes. QSL via 9M2OOO.

**E51KTA Raratonga (South Cook Islands)**
Dom M1KTA will be active from Rarotonga Island, OC-013, from 10th to 19th March 2017 as E51KTA. He will operate on HF including activity in BERU Contest. He may activate other IOTA and E5/N (North Cook). QSL via home call.

**S21 Bangladesh**
The team which brought Iran on air as EP2A last year will be in Bangladesh from March 15th to 27th using S21GM and S21KW. S21GM will be used in the first half, and S21KW in the second half. This is caused by the specifics of the regulations in Bangladesh, and not because they want more QSOs in the log. *www.lral.lv/s21gm/*

**VP8/H South Shetlands**
Alex, UA1OJL will be active from Bellinghausen station, King George Island, South Shetlands AN-010 as RI1ANO from April 2017 to March 2018. QRV spare time on all bands CW, SSB & Digi. QSL via RN1ON, direct or bureau; OQRS on Club Log.

*Himandhoo Island, Maldives*

**8Q7LH Maldives**
Bernd, DK7TF, Bernd, DF1FF, Jürgen, DH6ICE, Chris DK2CL and Zik DK8ZZ will be active from Himandhoo Island, Maldives between March 2nd and 9th as 8Q7LH. They will be QRV 80-10m CW, SSB and DIGI (JT65, PSK), also trying to be QRV on 60m. QSL via DK8ZZ.

**Christmas Island and Cocos Keeling Island**
VK3FY (Chris), VK3GK (Lee), VK3TZ (Tony) plus others will activate Christmas Island OC-002 as VK9XI and Cocos Keeling Island OC-003 as VK9CI in early October 2017, as follows: Christmas Island from October 2nd – 10th (coincides with Oceania SSB Contest weekend). Cocos Keeling Island from October 10th -17th (coincides with Oceania CW Contest weekend). 160m-10m with a focus on the low bands (possible 6m activity also) SSB, CW, RTTY. QSL via Charles M0OXO, OQRS.

**3Y0Z Bouvet**
The planned DXpedition to Bouvet Island, to take place sometime in early 2018, still needs $186,000 to reach their goal of $610,000 for the activation. Team members, led by Ralph K0IR, Bob K4UEE and Erling LA6VM, have contributed 50% of this total themselves. *www.bouvetdx.org*


Well, that's all for this edition folks, and that's all from the pen of EI2KC, at least for the time being. I've enjoyed the experience of writing about the hobby of DXing and exploring the vagaries of HF. Thank you for your patience and indulgence, and can I take this opportunity to wish my successor (whoever that may be) all the very best with HF Happenings. In the meantime, I hope you all enjoy working those rare ones and putting some nice DX in your log.

*Slán go Fóil*
*Anthony EI2KC*

# A Touch-Paddle Homebrew Project

**Tony Breathnach EI5EM**

As an avid CW operator, I was recently attracted to this project by an online video demonstration by Anthony EI2KC of a commercial touch paddle. I trawled the internet to see if there were any circuits out there as a basis for a similar homebrew project. I was disappointed by the lack of suitable circuits until I happened upon John, M0UKD's circuit.

The circuit and a full description are on John's page *m0ukd.com*. Touching the metal paddles triggers the sensor chips and the outputs of the unit then key your rig's internal keyer or alternatively an external keyer.

It seemed a simple circuit with only four integrated circuits, two for dits and a further two for dahs. The two touch sensor chips are AT42QT1011 and the output switching (keying) MOSFETS are IRFML8244TRPbF. This MOSFET was chosen for its low voltage operation facilitating the use of two AAA batteries as a power source. The circuit in standby draws less than 1mA to boot.

However, there was one serious complication for me in taking on this project. The circuit uses tiny surface mount devices and there weren't any direct equivalent discrete components available. This was initially off-putting as I had never undertaken an SMD project before. But isn't our hobby about experimentation? So I decided to accept the challenge and give it my best shot.

I ordered the components from Farnell online and when they arrived I designed a suitable printed circuit board (Fig.1) using the ink from a Sharpie (R) ultra fine point permanent marker as an etch resist around the pins of the integrated circuits and a coarser point to fill in the larger areas. I then etched the board, washed it and dressed it with fine sandpaper ready for populating with the components.

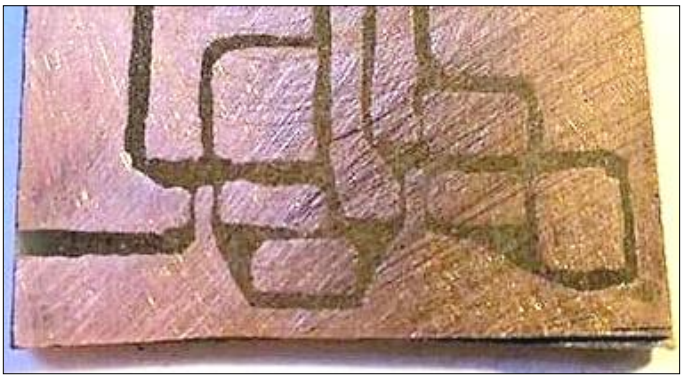


*Fig 1 - Section of the Printed Circuit Board*

Even though the SMD resistors and capacitors were tiny, I had no problem soldering them with a fine tipped soldering iron and thin solder. The same applied to the two output MOSFETs. However, the six-pin input ICs were a different matter. I spread out the four corner pins as much as possible, being very careful not to break them off. I had made the pads ón the PCB as large as possible and soldered the pins by heating the pads and running the solder onto the pins along the narrow traces. I used an illuminated jewellery loupe to examine my work and everything appeared ok (Fig.2).

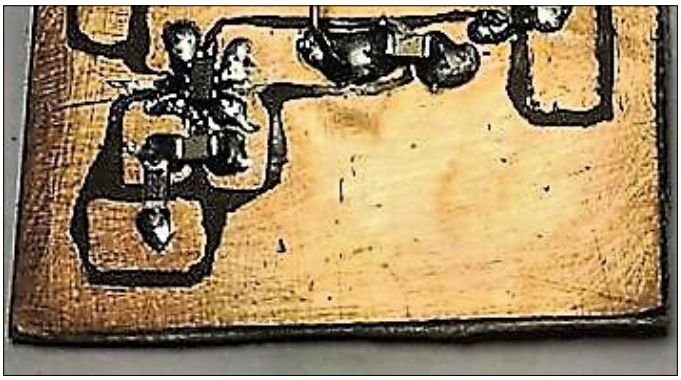


*Fig 2 - Section of the populated PCB*

I hooked up two AAA batteries and did a preliminary test on the board by touching the two inputs with my fingers. The keying outputs of the unit duly obliged by grounding. (I had temporarily connected two10k pull-up resistors between +3V and the keying output pads to carry out this test).

I housed the project in a diecast box which I drilled to accommodate the ON/OFF switch, stereo output socket and twin paddles. The battery holder and PCB were glued to the bottom of the box with impact adhesive (Fig.3).

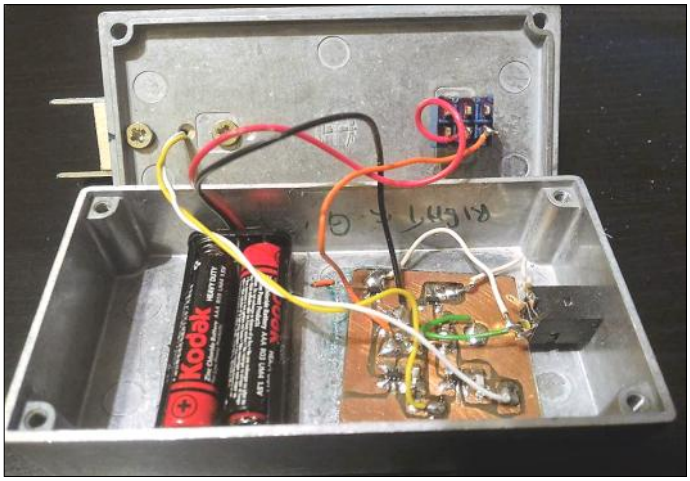



*Fig 3 - PCB and batteries installed in a diecast box*

I considered several possibilities for attaching the two paddles before settling on the design shown. The paddles need to make good contact with the thumb and index finger. While shopping in my local Tesco branch one evening, I was inspired when I noticed simple can openers for sale at €1 each. Their surfaces looked shiny and smooth and I bought two of them. The ends of each had been bent and punched to suit different types of cans. I hacksawed the ends off (below), then filed and rounded the sharp corners of each remaining length (Fig.4) which was about 65mm long.

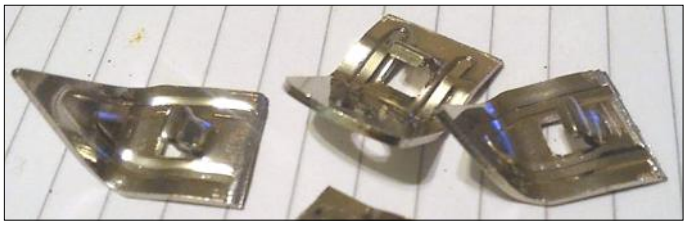



*Fig. 4 - Can openers ready to be installed as paddles*

I mounted the paddles on a short length (60mm) of 25x25mm planed wood using two countersunk woodscrews. I had drilled a horizontal hole across the block of wood and a vertical hole from the bottom to meet it. I then threaded two thin insulated wires from each side and out the bottom.

I made sure that the mounting screws were short enough so that they didn't meet in the centre of the wooden block. The ends of the two connecting wires were stripped and clamped between the block and paddle making good electrical contacts as the screws were tightened. The free ends of the wires were tested with a multi-meter to ensure good contact with the paddles. The wooden block was then secured to the top of the box with woodscrews from below, while the two wires were fed through another hidden hole. The PCB, paddles, switch, battery holder and stereo socket were then wired up. The batteries were inserted and the unit tested.

*Fig 5 - Close up of paddle*

Murphy's Law then hit. I discovered that the dits and dahs were reversed. However, this was easily resolved by reversing the paddle wires on the PCB. Satisfied, I screwed the lid down (Fig.6). Mission accomplished. Challenge met. Here is a short video clip on YouTube. *EI5EM paddles*

Best 73 de Tony EI5EM.

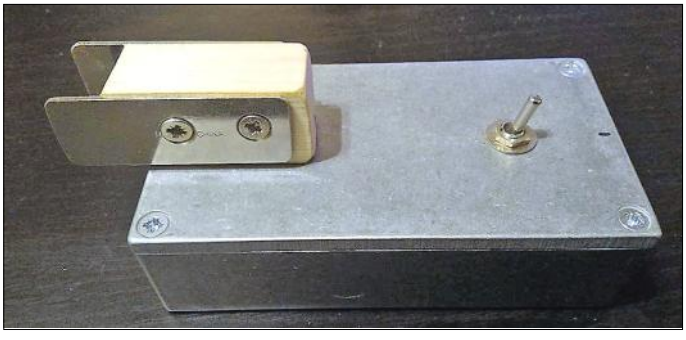


*Fig 6 The finished touch key*

# WAW - Wild Atlantic Way Progress Report - Dave EI6AL

The Wild Atlantic Way project continues to generate considerable interest with operators world wide. As of the last week of February the standings are as follows:

| County | Call | QSOs |
|---|---|---|
| Cork | EI99WAW | 6911 |
| Clare | EI66WAW | 5462 |
| Sligo | EI33WAW | 3617 |
| Kerry | EI88WAW | 3474 |
| Donegal | EI11WAW | 3378 |
| Leitrim | EI22WAW | 3286 |
| Limerick | EI77WAW | 3082 |
| Mayo | EI44WAW | 1692 |
| Galway | EI55WAW | 1641 |

Total QSOs to date 32,543, with 105 "Worked all 9" certificates issued and 1,400 QSL cards sent following requests through Club Log.

These calls are available for use by any EI operator - you dont have to be located in one of the WAW counties. They offer a great opportunity to go on air with a unique call and add to the numbers. In particular, calls with the lower rankings are sought worldwide with operators trying to get their "Worked all 9" certificates, and once you go on air you will be guaranteed a lot of attention.

Here are links to make arrangements to use the call of your choice - more information at *irts.ie*.

| | | | |
|---|---|---|---|
| EI11WAW | Donegal | Peter Homer | *EI4JR* |
| EI22WAW | Leitrim | Brian Canning | *EI8IU* |
| EI33WAW | Sligo | Tony Casey | *EI3HA* |
| EI44WAW | Mayo | Padraic Baynes | *EI9JA* |
| EI55WAW | Galway | Ciaran McCarthy | *EI8IH* |
| EI66WAW | Clare | Alan Cronin | *EI8EM* |
| EI77WAW | Limerick | Ronan Daly | *EI4KN* |
| EI88WAW | Kerry | John Costello | *EI9ESB* |
| EI99WAW | Cork | Dave Moore | *EI4BZ* |

**Log Keeping:** All operators must keep a log of their WAW QSOs, preferably in .adi format. Paul EI5DI has released SDX, a free Special-Event and DXpedition logger to log your QSOs and export .adi files. SDX runs on any version of Windows from XP to Windows 10.

Download SDX from *ei5di.com/sdxsetup.exe*

# Galway City Triple Mode Digital Gateway Project
## - a Work in Progress
## Steve Wright EI5DD

Initially, consideration was given to building a 2m EchoLink gateway but it seemed more logical to go digital instead. There is a minor interest in digital communications in the Galway/Mayo area and plenty of opportunity for experimentation. To date, Joe EI3IX, John EI7AB, and myself seem to be the only ones active on digital voice modes although there are two others registered in the DMR listings locally. A gateway would surely promote digital modes in our area. The advantage of the system chosen was to allow which ever mode was transmitted to the gateway to be forwarded to the server and destination repeater or gateway. If Fusion was received the system would work on Fusion, and if DMR was transmitted to it the operation would be on DMR etc.

A number of 'homebrew' DMR repeaters and gateways have been built using various commercial hardware, but powered by the MMDVM modems (Fig.1) so this set up seemed to be the best choice. The 'modem' package is made up of an Arduino Due micro with a MMDVM modem (Fig. 2) board as the front end, and a Raspberry Pi-3 running the MMDVM host software written by Jonathan G4KLX, a well-known author of D-Star software. This system was recommended by John MI0AAZ who has been instrumental in setting up many repeaters and gateway systems in Northern Ireland.

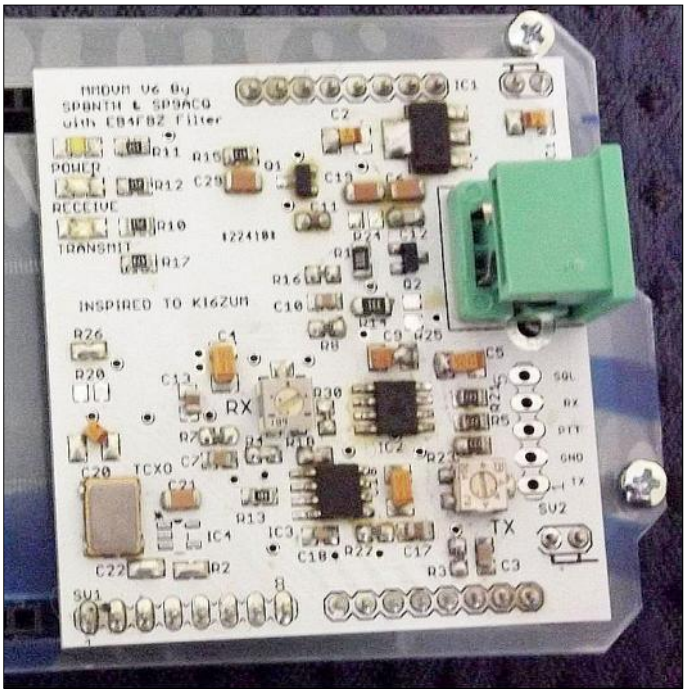



*Fig. 1 MMDVM Modem Board*

Raspberry Pi and associated software is not really my area of expertise. Not being all that computer literate, it was a good decision to seek assistance with the programming. With the aid of Team Viewer and John, MI0AAZ having access to the computer, it was possible to configure the Arduino Due board first. This was not time consuming and I could have been talked through that part. The configuration of the Raspberry Pi was different. It was an experience to be able to watch and have each step explained as the set up progressed. None of the quickness of the hand deceiving the eye where one learns nothing.

*Fig. 2 MMDVM board "piggy backed" on top of the Arduino Due*

The MMDVM image was written onto a 16GB SD card and plugged into the Raspberry Pi. The Arduino Due was plugged into one of the USB ports of the RPi and then the power applied to the RPi. LEDs came on but seemed to be static. It was necessary to find the IP address of the Raspberry Pi to connect the laptop to the system. A remote connection was made to the Raspberry Pi after a few attempts and the system screen appeared on the laptop. It was from here that the configuration took place.

Updates to the software were performed and then the system configuration file was updated with my information. It is important to go through this section with a clear head. The connection to the network is wholly dependant on this file. All details such as the callsign, DMR number, and location need to be entered here. The different modes of operation were entered here also. In my case D-Star, DMR and Yaesu Fusion.

Without the need for a radio connection, the Raspberry Pi, was connected to the internet and it auto booted into the program. On checking the Brandmeister Dashboard it was found that the software had connected and both DMR and Fusion servers and showed no errors Fig. 3 (overleaf)

D-Star required another registration number and this had not come through at the time and so was not tested. Initially the setup was performed via an Ethernet Cable but, on completion, the system is totally operational via WiFi connection from the shack.

The VHF Motorola GM350 (128-channel version) requires programming to allow "raw" unfiltered audio to be passed to the rig. The audio bandwidth should be set to 12.5kHz but it is necessary to expand this further as the settings are a little wider perhaps in the region of 15kHz will prevent a sharp cut -off at the edge of the 12.5kHz bandwidth allowing a little lee -way. The deviation of the transmitted audio will be adjusted

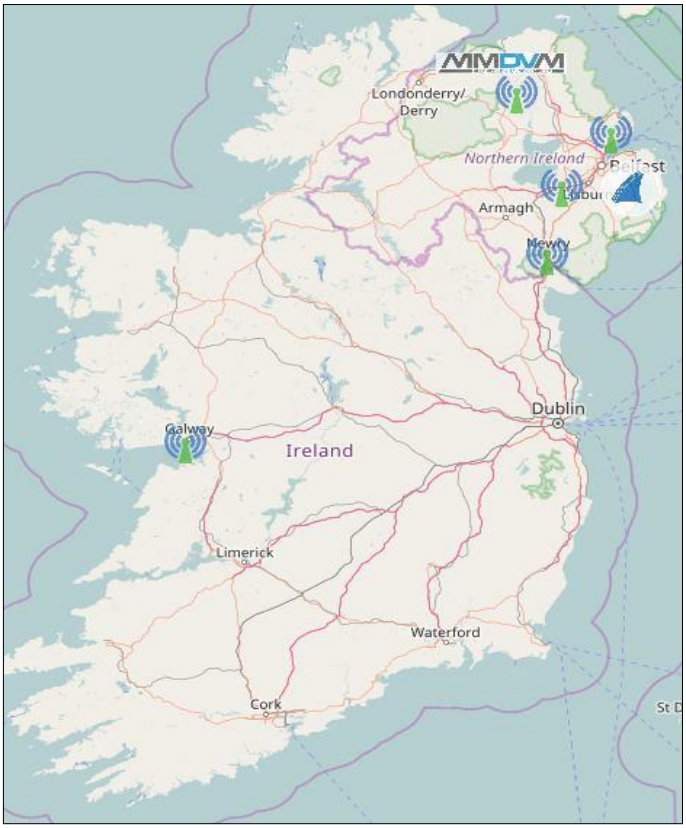



*Fig.3 Brandmeister Network map showing the evidence of a connection to the Brandmeister Server*

in a similar manner. A minor modification to the PCB of the GM350 is also required to bypass a capacitor in line to the audio output of the accessory socket. See modification illustrations Fig 4.1 to 4.3 below.

Before the modification the capacitor charges up briefly causing a slight frequency offset resulting in a high Bit Error Rate (BER)

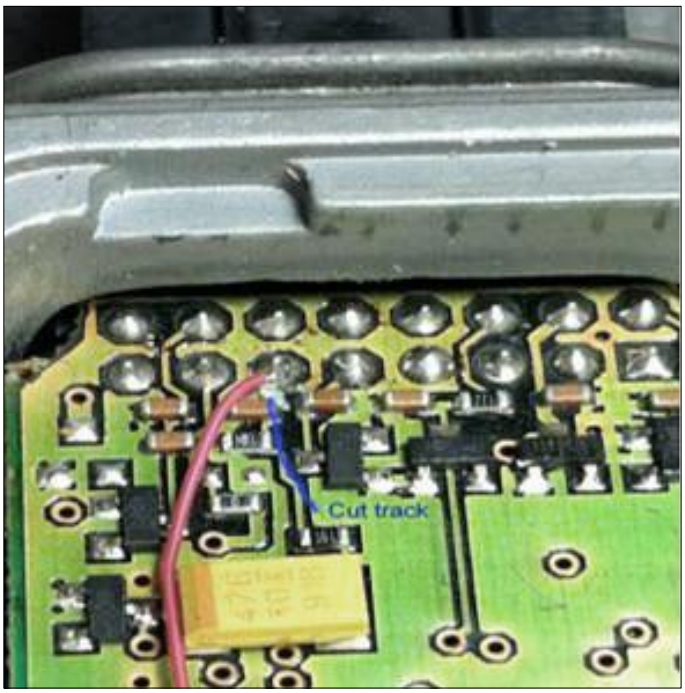



*Fig. 4.1 cut track adjacent to pin 11 of the accessory connector at the back of the GM350 and solder a wire directly to the pin.*

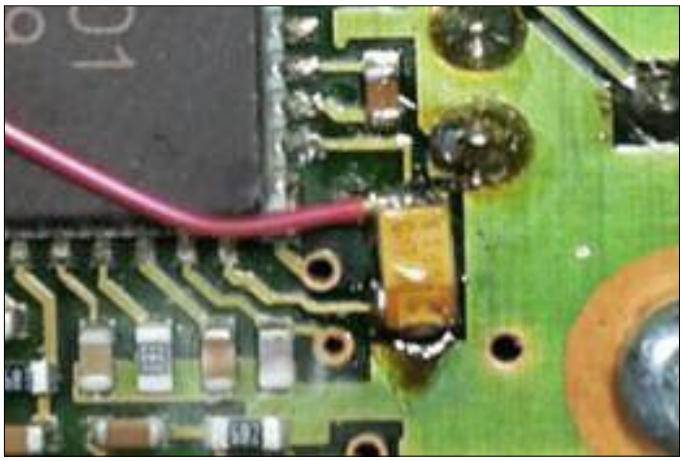
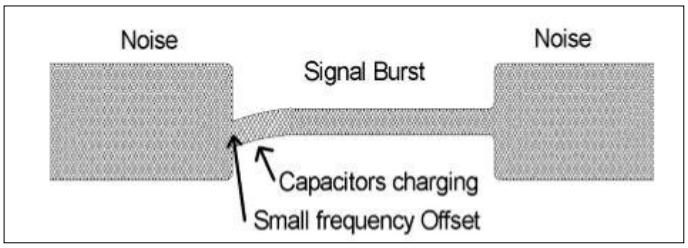


*Fig. 4.2 solder the other end of the wire from pin 11 to the negative side of the 1uF capacitor adjacent to the IF chip*

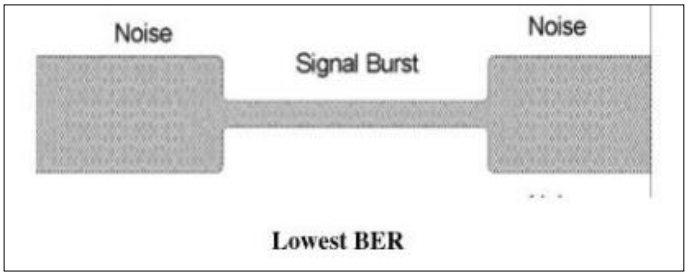
*Fig. 4.3 The completed modification*




*Before the modification*

After the removal of the capacitor in line there is no error caused by the charging of the offending capacitor

The complete system is shown below with the VHF Motorola GM350, Arduino with MMDVM "piggy backed" and the Raspberry Pi (Fig. 5).




*After the modification*

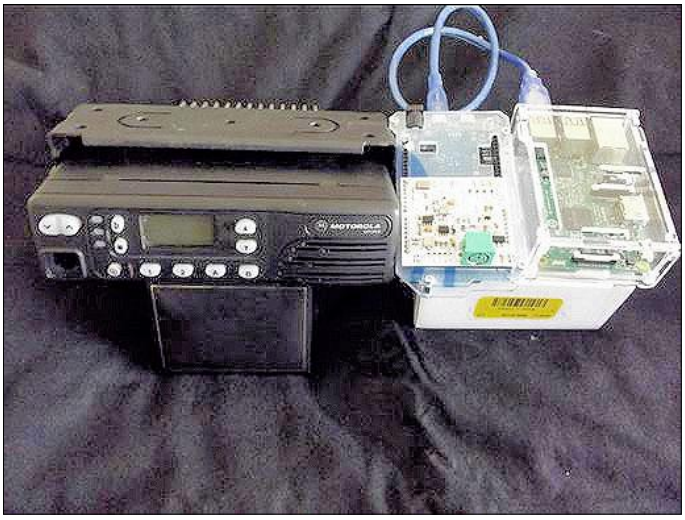


*Fig. 5 The complete set up with Motorola GM350, Arduino Due and Raspberry Pi*

Once the licence is approved it will be possible to register the digital gateway with the Brandmeister network. This will involve acquiring a DMR registration number followed by registration on the network. Once all is up and running the location of the gateway will be seen on the network map at *brandmeister.network/?page=networkmap* (Fig. 6)

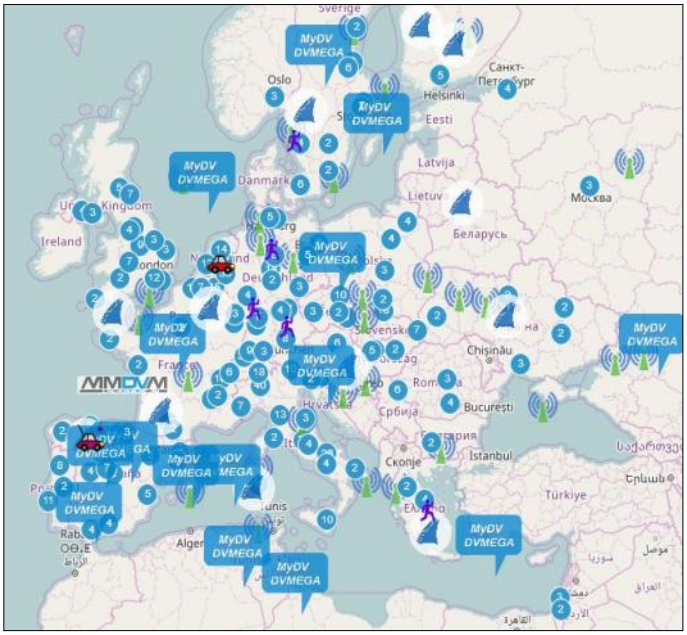



*Fig. 6 A screenshot of activity over Europe on the Brandmeister Network*

**Thanks:** Special thanks to John Anderson MI0AAZ, and Dave Randals M0AUT, for their assistance with the programming and supply of the MMDVM board and Arduino Due and Oak Communications for re-programming the GM350 on frequency and modifying the audio input and output stages.

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# A Spark from the Dark

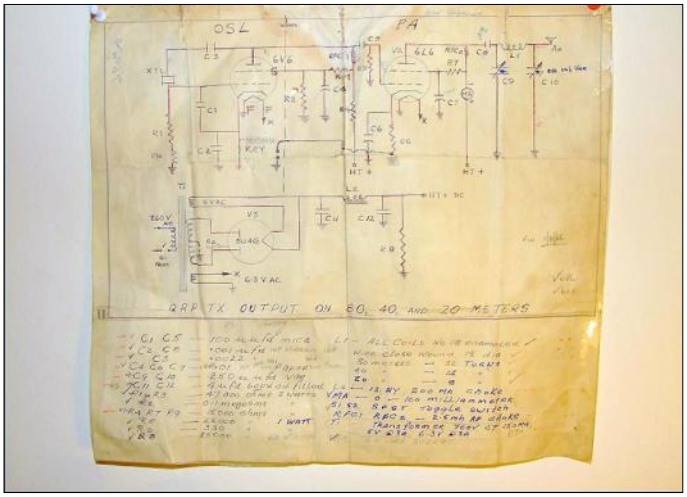
## Leo McHugh EI8BR

I joined the IRTS in February 1967 and attended lectures on radio theory and morse code in 91 Lower Baggot Street, Dublin, which was the headquarters at the time. Tom O'Connor EI9U, Bill McIlwaine EI9F, Brian Fogarty EI6X and Tom Burns EI9AH, who were committee members, gave lectures on receivers, transmitters and various parts of radio equipment to demonstrate their function.

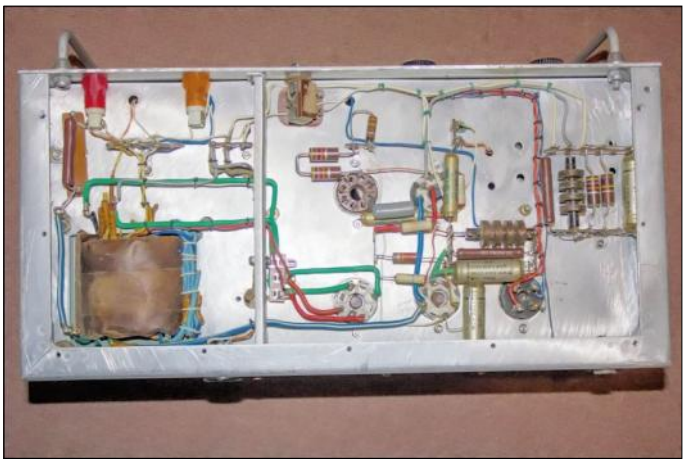
One of the early tasks we were given was to construct a 10watt (crystal controlled) transmitter from a schematic diagram. We managed to get most of the parts for the transmitter from various second-hand radio shops in Dublin. Having completed the transmitter I sat my amateur radio licence exams in June 1967 and received my licence shortly afterwards.

Although I did use the home constructed QRP TX for about 6 months I eventually replaced it with a new Johnson Viking. Since then my original TX sat in the attic for over fifty years and I only recently rediscovered it.

Tom McGrath EI7HT recently suggested I bring it to a South Dublin Radio Club meeting as it is a piece of radio amateur history, and to our surprise is still worked, albeit a bit chirpy. With the help of Brendan Daly EI4BB (set of capacitors and info on circuitry), Joe Cosgrove EI6EG (information on measurements) and Dermot Flanagan EI6FZ (test equipment and information on circuitry), Ned Collins EI5DS (replacement of PA valve 6L6) I managed to repair it. Here are pictures of the original equipment as well as the original schematic diagram—a true Spark from the Dark.




*The home-constructed transmitter and its circuit diagram.*



*Views of the top and underneath of the finished transmitter*

## News from the Clubs and Contest Participation

We welcome regular contributions from all individual members and clubs affiliated to IRTS telling us about activities which can be shared with our members.

We particularly welcome items accompanied by clear, crisp, correctly-exposed photos (pixels are precious), together with separate captions identifying everyone.

The way to get your news items printed is to make it easy for us to print them!

## Hotel Bookings for the IRTS AGM Weekend 8/9 April

**Crowne Plaza Hotel, Green Park, Dundalk**

Single rooms are available for Saturday night at €104 including breakfast, with double rooms at €114 including breakfast. Please quote IRTS Rally 8/9 April when booking.

Telephone : (042) 939 4900

For those wishing to stay an extra night and enjoy Dundalk and the Cooley Peninsula, rooms are available for Sunday night at the rate of €89 B&B Single, and €99 Double.

# Irish Radio Transmitters Society

**Treasurer's report for the year to 31st December 2016**
**for presentation to the Annual General Meeting**
**Crowne Plaza Hotel, Dundalk - Sunday 9th April 2017**

I have pleasure in presenting the Accounts for the year 2016 for approval. This year the accounts are available to members prior to the AGM in April 2017.

The accounts for the Society show another small surplus for the year ending 31st December 2016. There was no expenditure for YOTA during the year, which resulted in an increase in the surplus compared with 2015. All costs are broadly in line with previous years apart from reductions in the Callbook accrual following the publication of the 2016 edition of the callbook during the year. Exam fees and morse tests show an increase over 2015. Subscription totals are slightly down for the year, partially due to a significant number of subscriptions paid at the end of December through Paypal - these will appear in the 2017 accounts.

The Promoting Amateur Radio fund that was established prior to this financial year remains at just under €5000. The fund is there for use in any activity that would bring to the attention of the general public the field of Amateur Radio and I would appeal again this year to clubs to actively explore any ideas that would qualify for payments under this grant.

Thanks again to our auditors Robert O'Donnell EI5CK and to Brendan Lynch EI6GA who did a thorough job in checking the accounts prior to signing them off.

*Dave O'Connor EI6AL, Hon. Treasurer*

## Balance Sheet as at 31st December 2016

| | 2015 | 2016 |
|---|---|---|
| **Fixed Assets** | | |
| Equipment | 0 | 0 |
| Prize Bonds | 89 | 89 |
| Irish Life & Permanent Shares | 0 | 0 |
| **Current Assets** | | |
| Stock for Re-sale | 513 | 300 |
| Cash on Deposit | 46,988 | 47,129 |
| Cash in Bank | 19,290 | 18,736 |
| **Total Assets** | **66,880** | **66,255** |
| **Total Liabilities** | **0** | **0** |
| **Surplus Assets over Liabilities** | **66,880** | **66,255** |
| **Represented by** | | |
| General Reserve | 49431 | 51,653 |
| Call Book Reserve | 3,200 | 1,214 |
| IARU Conference Reserve | 3,202 | 2,077 |
| Promoting Amateur Radio Fund | 4,934 | 4,662 |
| Donations Fund | 6,113 | 6,649 |
| | **66,880** | **66,255** |

*Signed: Dave O'Connor EI6AL, Hon. Treasurer*

# Irish Radio Transmitters Society

## Income and Expenditure Account for the Year to 31st December 2016

| Income € | 2015 | 2016 |
|---|---|---|
| Subscriptions | 23610 | 22615 |
| Donations | 1054 | 536 |
| PAR Fund | 0 | 0 |
| Advertising | 75 | 0 |
| Book and CD Sales | -40 | -185 |
| Interest & Currency Gain/Loss | 246 | 175 |
| Exam fee and Morse Tests | 1080 | 1850 |
| EI150ITU / EI90IARU | 163 | 83 |
| AREN | 768 | 221 |
| Other Income | 1331 | 0 |
| **Total Income €** | **28,287** | **25,294** |
| **Expenditure €** | | |
| Echo Ireland Printing | 6409 | 6409 |
| Echo Ireland Postage | 4840 | 4901 |
| Callbook (accrual) | 3200 | 1000 |
| Postage | 856 | 696 |
| QSL Outgoing | 1200 | 600 |
| QSL Incoming | 2095 | 1115 |
| Paypal Commissions | 582 | 647 |
| Insurance | 706 | 706 |
| Committee Meetings Room Hire | 899 | 922 |
| Stationary | 71 | 258 |
| AGM Costs | 837 | 978 |
| IARU Dues | 1108 | 1043 |
| Licence Fees | 60 | 370 |
| IARU Convention Reserve | -204 | -1263 |
| Bank Charges | 422 | 450 |
| Trophies Etc | 994 | 624 |
| Website Costs | 422 | 534 |
| Donations | -250 | 0 |
| AREN | 450 | 689 |
| Comreg | 305 | 327 |
| PAR Fund | 0 | 0 |
| Exceptional Items | 593 | 1663 |
| YOTA | 1251 | 0 |
| Miscellaneous | 300 | 402 |
| **Total Expenditure €** | **27,145** | **23,072** |
| **Net Income/Deficit for Year €** | **1,142** | **2,222** |

## Notes on, and forming part of the Accounts for the year ended 31st December 2016

**Income**

Subscriptions and Income received during the year were treated as cash received and credited to the income and expenditure account. No provision was made for subscriptions in arrears. No provision was made for treating subscriptions falling after 31st December as prepayments.

**General Reserve**

| | |
|---|---|
| Balance as at 1st January 2016 | € 49,431 |
| Surplus at 31st December | € 2,222 |
| General Reserve carried forward | **€ 51,653** |

**IARU Conference Reserve**

| | |
|---|---|
| Balance at 1st January 2016 | € 3,202 |
| Attendance IARU Conference | € -1,125 |
| Total reserve 31st Dec | € **2,077** |

**Callbook Reserve**

| | |
|---|---|
| Balance at 1st January 2016 | € 3,200 |
| Transferred from general reserve | € 1,000 |
| Printing 2016 Callbook | € -2,986 |
| Total reserve 31st Dec | **€ 1,214** |

**PAR Fund**

| | |
|---|---|
| Balance on 1st Jan 2016 | € 4,934 |
| Funds used 2016 | € -272 |
| Balance on 31st Dec | € **4,662** |

**Donations Fund**

| | |
|---|---|
| Balance on 1st Jan 2016 | € 6,113 |
| Donations 2016 | € 536 |
| Balance on 31st Dec | € **6,649** |

**Cash on Deposit**

| | |
|---|---|
| Balance on 1st Jan 2016 | € 46,988 |
| Balance on 31st Dec | € **47,129** |

**Balance AREN**

| | |
|---|---|
| Balance on 1st Jan 2016 | € 318 |
| Balance on 31st Dec | € **-150** |

(this deficit included in general reserve)

## Auditors Report for year ended December 31st 2016

*We, the undersigned, acting as Honorary Auditors of the Irish Radio Transmitters Society, have compared the foregoing Income and Expenditure Account, Balance Sheet and Notes thereon, with the books and vouchers of the Society and certify that they are correct and in accordance with them.*

*Signed:*

*Robert O'Donnell EI5CK* *Brendan Lynch EI6GA*

*20th February 2017*

# Irish Radio Transmitters Society

## Committee Report 2016 for presentation to the Annual General Meeting

## Crowne Plaza Hotel Dundalk, 9th April 2017

**Committee Meetings:** There have been seven committee meetings held during the year, alternating between Portlaoise and Athlone.

**Accounts 2016:** The accounts for the Society show another small surplus for the year ending 31st December 2016. There was no expenditure for YOTA during the year, which resulted in an increase in the surplus compared with 2015. All costs are broadly in line with previous years apart from reductions in the Callbook accrual following the publication of the 2016 edition of the callbook during the year. Exam fees and morse tests show an increase over 2015. Subsciption totals are slightly down for the year, partially due to a significant number of subscriptions paid at the end of December through Paypal - these will appear in the 2017 accounts. Dave EI6AL, Treasurer.

**Membership Report:** There was a small reduction in membership in 2016, starting the year with 935 members and ending with 924 - a reduction of 11. There was an increase in the number of members switching to concessionary membership, however the subscriptions remain unchanged for 2017. The Society was delighted to welcome 13 SWL members and 41 licensed members during the year, a total of 54 new members. The reduction in membership was due to Silent Keys and members who lapsed during the year. Membership Enquiries to Dave, EI6AL

**Contests:** In 2016, the society ran three Field Day contests and seven Counties contests. We try to encourage as many members as possible to participate in our contests, including newly licensed operators and those who do not generally enter international contests; with this in mind, we continue to accept paper logs and logs in formats other than Cabrillo. Following this feedback the contest rules were revised – these revisions included changes in start times and contest durations, a requirement for a minimum number of QSOs for award eligibility and encouragement for more CW activity in mixed-mode contests; these changes were detailed in the December Echo Ireland.

Logs from 74 members were submitted for one or more IRTS contests in 2016, along with logs from 30 non-members living outside EI. Amendments to the contest rules were suggested in the September issue of Echo Ireland, and feedback from members was invited.

**Wild Atlantic Way (WAW) :** Introduced on January 1st and its popularity can be judged by the early results. By mid February 2017, the total QSOs numbered 27,575 with a total of 70 "worked all 9 calls" certificates issued and approximately 2,100 QSL cards processed following requests via Club Log.

**Web Site:** Our web site *irts.ie* provides information on the society's activities and other amateur radio events. The site design is many years old and needs to be updated, however this is not a simple task and we have been unable to secure any volunteers to take it on. We have, however, kept the content up to date.

**Awards Committee Report:** The IRTS Awards Committee is tasked each year with preparing Awards for Services to the Society or to Amateur Radio, Awards to IRTS members for Other Achievements and IRTS Contests and a small number of IARU contests. In 2016 the Committee decided to replace the Plaques with commercially designed Awards Certificates. This has proved to be an immense help in the whole ergonomics of issuing the many Awards and also in the cost to the Society. These Certificates can be edited to reflect the winner's name and callsign etc. for each contest year. Furthermore, they can be attached to an email as a PDF file which is extremely convenient where the winner cannot attend the Presentation Ceremony or has won an "Outside EI/ GI" award category.

2017 sees some changes to the IRTS Contest Calendar. This has been done in conjunction with the Contest Manager, based in part on the level of participation/interest in those Contests.

The Committee is always happy to receive nominations for awards for "Services" and "Other Achievements" and would hope that the IRTS membership would be proactive in advancing Clubs and/or Individuals for these Awards. Enquiries to Jim Holohan EI4HH .

**EMC Report:** In 2016 the IRTS EMC representative, Brendan EI6IZ attended the IARU Region1 Interim meeting in Vienna. EMC representatives from 14 national societies were in attendance to take part in the 2 days of meetings. EMC is now a permanent IARU R1 Committee, C7, which 'meets' approximately once a month via a SKYPE conference call.

The National Societies exchanged information about the EMC issues each is facing and how in each country regulatory enforcement is implemented. In some countries the EMF exposure terms of the national amateur radio licence require amateurs to prepare exposure calculations to ensure that RF levels at publicly accessible locations are within the ICNIRP limits. Based on experiences to date in Germany we have little to fear here.

DARC has released software to make the calculations and I would encourage all amateurs to download this software and make their own calculations.

The software is available via the IARU R1 Website under the EMC section *https://www.iaru-r1.org/index.php/downloads/Documents/EMC/ICNIRPcalc-v1.5/*

IRTS EMC is actively involved with the ETCI/NSAI TC-16 EMC standards committee and in 2016 attended both meetings held in Dublin.

This year there have been several cases of HF transmissions affecting broadband routers, in a couple of cases this was eventually traced to poor RF immunity of the Power supply supplying DC to the broadband modem rather than RF ingress into the modem and network wiring. In many cases the PSU supplied with the modem will be a 12V supply making it easy to substitute a known RF immune Power supply for the purposes of testing.

There have been several cases recently where Smart TV's have had poor immunity in the vicinity of 2.4GHz Wifi routers and devices; there have also been reports of issues with an LG Computer monitor. *https://9to5mac.com/2017/02/03/lg-fixes-wifi-interference-problems-with-ultrafine-usb-c-5k-display-new-units-unaffected/*. This may indicate that these devices may also experience issues at UHF and on the amateur microwave bands and IRTS would be keen to hear any reports of immunity issues. The IRTS EMC Manager is interested in hearing of any issues members may be having, both resolved and those where assistance is required and also from members with an interest in getting involved with EMC matters. Contact: Brendan Minish, EI6IZ

**ComReg:** The Commission for Communications Regulation (ComReg) is the statutory authority responsible for amateur radio licensing. Regular contact is maintained with ComReg by the Society and there is a good working relationship between the Licensing and Frequency Management sections of the Commission.

***Contest Power:*** An application was made for increased power for all contests listed on the WA7BNM contest calendar plus the three field day contests. This was refused on the basis that that it would amount to a de facto permanent increase in power and that only two requests for increased power had been received by ComReg since increased power was approved for twenty five contests in 2011.

***Draft Radio Spectrum Management Strategy 2016 – 2018:*** This was published in mid December 2015 in document ComReg 15/131. A lengthy response was submitted by the Society in late January 2016. Details of the issues raised in the submission were published in the March 2016 issue of Echo Ireland. When it became clear that the new WRC-15 allocation at 5 MHz would not affect the existing 5 MHz allocations in the UK the Society notified ComReg of this as further support to alignment of 5 MHz allocations here and in the UK which was one of the issues raised in the Society's Spectrum Submission. The finalised Spectrum Strategy was published on 21 June 2016 in document ComReg 16/50 together with ComReg's detailed response in document ComReg 16/49 to all the submissions made to the Draft Spectrum Strategy.

The final Spectrum Strategy set out the following work programme for ComReg in respect of the amateur service for the period 2016 – 2018:

1. to make available the 5351.5 – 5366.5 kHz band in line with the outcome of WRC-15; (this was done in the revised Amateur Station Licence Guidelines, ComReg document 09/45R2 published on 22 December 2016).
2. to make available 30 – 49 MHz and the 54 – 69.9 MHz and 69.9 – 70.125 MHz bands to facilitate propagation beacons, digital amateur television repeaters and to align the current allocations with those in the European Common Allocations Table; and
3. to make available 70.45 – 70.50 MHz band to align it with the European Common Allocations table

From this it seems that the full 70 MHz band from 69.9 – 70.5 MHz will be released in due course, plus some or all of the spectrum between 30 and 49 MHz and 54.0 to 69.9 MHz

The Strategy document turned down the Society's request for the introduction of a licence in line with the CEPT Novice Licence as well as the request for alignment of our 5 MHz allocations with those available in the UK. Fuller information on spectrum issues was published in the December issue of Echo Ireland.

***Amateur Station Licence Exam:*** The agreement under which IRTS is responsible for setting, organising and correcting the examination for an Amateur Station Licence was renewed in December 2016 for a further five years. Since the last AGM two examinations were held in June and December 2016 and 38 candidates sat these examinations. Since IRTS took over responsibility for administering the examination process twelve years ago, twenty four examinations have been held and 422 candidates (including repeats) have sat these examinations and 271 have qualified for a HAREC qualification.

The Committee takes this opportunity to thank the officials in ComReg for their cooperation with the Society during the year.

**Radio News:** The Society is still seeking volunteer HF newsreaders as this service depends at present on just two newsreaders. Particular thanks is due to Aidan Noone EI7JC who continues to provide interesting and informative news

scripts each week as well as to the HF and VHF newsreaders who give their time to bring us the radio news service throughout the year.

**Publications:** During 2016 four editions of Echo Ireland were published in March, June, September and December. There were 12 issues of the EiNews electronic newsletter published on the first of each month and emailed to more than 700 subscribers. There was an increase in contributions from members and clubs. Editors Aidan EI7JC and Steve EI5DD would like to record their thanks to all who contribute and to Paul EI5DI and Dave EI8KG who work in the background on quality control.

**HF Report:** The role of the HF Manager, a relatively new post in IRTS, is to interface with Committee 4 of Region 1 concerning planning and operational matters relating to the use of spectrum allocated to the amateur service below 30 MHz. In this regard an interim 5 MHz Plan for the band 5 351.5 - 5 366.5 kHz was agreed by IARU-R1 in Vienna in April 2016. It is subject to final approval at the 2017 IARU-R1 General Conference in Germany. IRTS has implemented the 5 MHz Band Plan subsequent to the band's release in Ireland by ComReg in early 2017.

As a companion to the regular DXCC and eQSL tables published on the web and in Echo Ireland, IRTS has introduced an IOTA 'standings' table. This enables those interested in the IOTA award programme to input their own tally of worked IOTA references which fixes their position in the table. Columns are also available to input their official awarded scores, as well as the number of islands worked in each continent. For further details see *http://www.irts.ie/cgi/show_iota_list.cgi* or contact the HF Manager, EI3IO.

**IARU Liaison:** The role of IARU liaison is to facilitate the information flow between IRTS and IARU-Region 1, which it is hoped to have been achieved. The job is made easier by the additional role of our officer as an elected Region 1 Executive Committee member and spectrum management expert, currently leading the preparation in IARU Region 1 for agenda item 1.1 of the 2019 ITU World Radiocommunication Conference (WRC-19) where administrations World-wide will consider a frequency band allocation in Region 1 at 50 – 54 MHz in common with Regions 2 and 3.

This means ensuring the Union submits reasoned documents to the four Region 1 Regional Telecommunications Organisations (RTOs) which represent Arab countries, African countries, European Countries and the CIS countries of the former Soviet Union, with the goal of winning their support for the submission of proposals to WRC-19 to achieve a band allocation to the amateur service in 50 – 54 MHz. It is also important to liaise with colleagues in IARU Region 2 and Region 3.

IRTS also has an opportunity to submit documents to the 2017 IARU-R1 General Conference on planning and using our frequency bands, interference to and from the amateur service, competition and contests, encouraging youth as well as other policy, administrative and financial issues. Once documents have been issued by other IARU Member Societies, IRTS will need to develop a position on the various proposals. IRTS Members and Irish licensees should watch the web-site and Echo Ireland for further information. (IARU Liaison, EI3IO)

**The QSL bureau**

*QSL Cards:* The QSL cards are distributed by a dedicated team of members on a regular basis. From an initial sort by Michael EI2CL the cards are picked up by Pat EI2HX and brought to the IRTS. committee meetings and handed over to the attending QSL managers, those not at the meeting will receive them in the post later that week so they can be sorted out and get to you as quickly as possible. On the subject of postage, with the cost of postage as ever going up, it was noted by the QSL managers that 5 cards could be sent for the same price as a single card. If there are only a couple of cards for you this time the manager will hold onto them and add them to the cards that arrive the next time, if there are none to add then what we have for you will then be sent to you.

*You and your cards:* On the subject of you, do the QSL managers have your details? Some members may have changed their call sign over time, be it from a 3-letter to a 2-letter call sign, have come back to the hobby, (and having to get a new call sign) and if you are in charge of a special event or club call sign, do please let the QSL manager for that call sign's number know who to send it to, as not all QSL cards come back with "Via EI ???" on them. So let us know so that you get YOUR cards. Your QSL manager's details are, as always, on page 2 of the Echo Ireland, so let YOUR current manager and even YOUR previous call sign manager know where to send them, as the other station my take months to send out their cards. It has been noticed by some managers that some QSL cards arrive many years after the QSO, this is not that the QSL card has been lost in the various bureaus, but someone has got a new computer logging programme and he has simply just stuck a sticker on a blank QSL card. You can bring your QSL cards for EI to the rallies and hand them in at the IRTS stand, but all non-EI's must be sent to our outgoing manager, details of which are found on Page 2 of Echo Ireland and on the society's web pages.

The outgoing committee would like to thank all the QSL managers for their service in getting the QSL cards to their final destination.

**AREN**

In February, AREN member, Conor, EI4JN, attended a Voluntary Emergency Services subgroup meeting where the recent flooding and events were discussed, and how the multi-agency response operated over a sustained duration. There were many challenges including the huge strain put on the communications networks in certain areas.

In March, members attended a two hour training event was run in Cork by An Garda Síochána. This was a familiarisation event between the Principal Response Agencies and the Voluntary Emergency Services and an introduction to the dispatch control centre in Anglesea Street in Cork.

The Connemara Marathon took place on the day of the IRTS AGM in April 2016. Galway VHF Group and the medical services had their hands full due to poor weather. Approximately 60 cases of hypothermia were treated with five transferred to University College Hospital and one by helicopter.

In May several AREN members attended a talk in Cork regarding the Tetra communications network and its performance in the previous spell of bad weather over the 2015/2016 winter.

In June EI4JN, EI7IG and EI8JA assisted on safety boats at the Ocean to City Festival in Cork over the weekend of 4-5th. Five AREN members from four different counties assisted at the Sean Kelly Tour in August. AREN assisted in setting up the control centre, provided asset tracking and live weather reporting from the mountains.

A prototype Internet-of-things (IOT) based tracking device developed by John, EI7IG was tested on the event and John subsequently presented a paper on the project at the ARRL/TAPR conference in Florida in September.

The 5th National Training and Development Weekend was held at the usual venue of Lough Derg House, Dromineer County Tipperary on 19th and 20th of November. The agenda this year included reviewing our strategy document, introducing a member training record card, review of member training up to now and a more in-depth discussion of digital communications systems and MCP operation. Members brought and demonstrated portable kit and EI5DD delivered a presentation on NVIS.

In October EI4JN, EI2HBB and EI2KA were in Valentia for an inter-agency exercise. The theme of the event was working together in searches and showing Kerry AGS what voluntary capabilities were available and how they operated. Morning presentations were delivered by the Coastguard, Civil Defence Search dog and drone unit, Civil Defence again on Tetra and Coast Guard Interoperation, Sgt Peter Murphy on dealing with the media, and EI4JN on AREN and its capabilities. The event was well attended by multiple Civil Defence, Mountain Rescue, Search Dog, Coastguard and AGS units.

The whole concept of the voluntary groups getting more integrated with the Principal Response Agencies is being piloted in the Cork/Kerry area and will be used as a model for the rest of the country in future.

By the end of 2016 approximately 80% of our members have completed the initial on-line Major Emergency Management training. Along with this, and as a direct result of Served Agency feedback, we are continuing to work on improving our logistical digital communications capability through the use of digital modes on HF.

Throughout 2016, approximately 500 hours was directly spent by members on public service activities. This does not include the time spent preparing for events, training or meeting with served agencies. Many thanks to all members for donating their time and expertise to public service. Anyone interested in what AREN does should feel free to contact John Ronan, EI7IG via the contact details on the IRTS website.

**International Amateur Radio Monitoring System (IARUMS)**

The IARU Monitoring System is the defence organisation of the worldwide ham radio community. Our bands are under ever increasing attack from outsiders using our allocations without authorisation. It is therefore necessary to observe our part of the spectrum, to take note of any illegal intruder and report all events to the different national telecommunication authorities, who might try to sort out the problems. The most common group of intruders audible in Ireland are still fishermen from Spain, Portugal, Ireland and a variety of other countries. The second group of intruders includes radar stations and other military communications from the ever growing conflict hot points like the Middle East, Ukraine, Far East and the Pacific. The third group consists of a number of broadcasting stations still using the 40m band.

Monthly reports with all incidents recorded are sent to the IARU coordinator in Germany. The report is included in a general report which in return is published online on the IARU MS webpage. The Irish section of the IARUMS also takes part in the email alert system for a quick response to a sudden intruder.

Reports about intruders observed by Irish HAMs or SWLs are always welcomed by the MS officer, Michael EI3GYB.

**Committee Nominations for 2017/2018**

| | | |
|---|---|---|
| President | Gerry Gervin | EI8CC |
| Vice-President | Jim Holohan | EI4HH |

**Committee**

| | | | |
|---|---|---|---|
| John Owen-Jones | EI1EM | Anthony Dolan | EI6GGB |
| Pat Fitzpatrick | EI2HX | John McCarthy | EI8JA |
| Dave Court | EI3IO | Tom McDermott | EI9CJ |
| Seán Donelan | EI4GK | Larry McGriskin | EI9CN |
| Dave O'Connor | EI6AL | Pat O'Connor | EI9HX |
| Brendan Minish | EI6IZ | | |

**Report compiled by John Owen-Jones, Hon Secretary, from IRTS Officers' Annual Reports, February 2017**

# Building KV4QB's Scalar Network Analyser SNA Jr II

**Gerry Kavanagh EI8DRB** *gerryk.com*

I came across the highly informative and interesting website of DuWayne KV4QB through Bill Meara M0HBR who has the excellent ham radio podcast Soldersmoke. DuWayne has documented many projects on his site, but one that caught my attention is the SNA Jr II. An SNA is a Scalar Network Analyser, which is a device that has the capability to measure RF amplitude. The SNA Jr II is based on a number of inexpensive modular components. The brain of the device is an Arduino Nano, display is courtesy of a small 1.8" TFT, control through a push-button rotary encoder, and signal generation is provided by the Analogue Devices AD9850, and the RF power measurement is done by another Analogue Devices component, the AD8307. The AD8307 can take as input an RF signal up to 13dBm, and as low as -70dBm so has quite a wide range. It first became widely known in the Amateur Radio community when Wes Hayward W3ZOI published his design for a power meter using this component. These devices are all available through eBay.

DuWayne has published PCB designs and a bill of materials for his SNA Jr II. He also uploaded the Eagle PCB files to OshPark, so ordering a batch is a very simple matter. In my case, though, I thought I could get a cheaper deal by shopping around. I have used Chinese supplier DFRobot for other components in the past, and found them very reliable, and they also do PCB fabrication, so I though I might try them. There was a little stumbling block however... they require Gerber files for PCB manufacture rather than the files created by EagleCAD. EagleCAD has, however, the capability to generate Gerber files using its CAM (Computer Aided Manufacturing) module. Gerber files are basically vector files describing each layer of the manufacturing process... copper tracks, solder masking, silk-screening and drills.

It took about three weeks for my PCBs to arrive, and on inspection, they look perfect - for less than half the cost of OshPark, including postage. In the meantime, I had ordered the rest of the passive components from Farnell, who do free shipping to Ireland. I had the main modules already to hand, so was ready to start construction.

The build was relatively quick, since the SMD components are on the larger size (1206), and there is not a huge amount to solder. All-in-all it took about an hour. I had a aluminium case in the junkbox which I dremelled to permit access to the screen and drilled to allow the encoder shaft to peek through. Once this was done assembly was straightforward. I had a 7.2V LiPo from an old RC helicopter lying around, so that was co-opted for power.


*Fig 1 PCBs arrived from DFRobot*

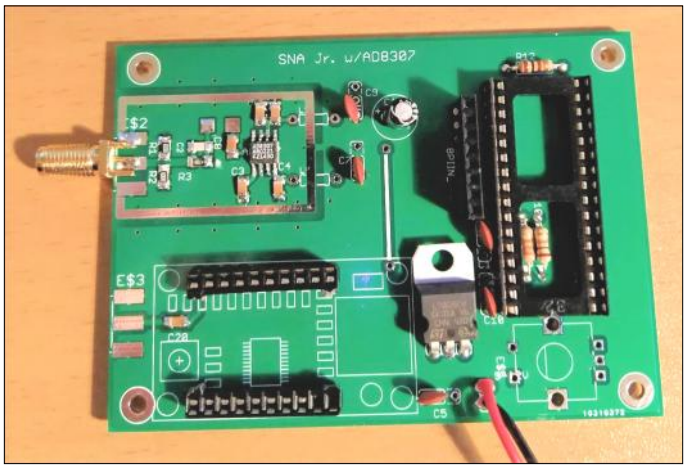



*Fig 2 PCB built*

Once the software was uploaded to the Arduino, I quickly ran through the functionality. The SNA Jr. II can do the following:

Measure filter response - a start and end frequency can be set and swept, with the output of the filter measured and a graph of response generated. It is capable of frequencies as high as 40MHz, so is well capable in HF frequencies.

Measure RF power - using a 40dB tap, the power output of a rig can be measured.

Measure antenna response and SWR - using a Return Loss Bridge, the response curve and SWR of an antenna can be plotted, assisting with tuning.

Measure resonance - using an additional coil the SNA Jr. II can behave as a DIP meter, measuring the resonance of a circuit.

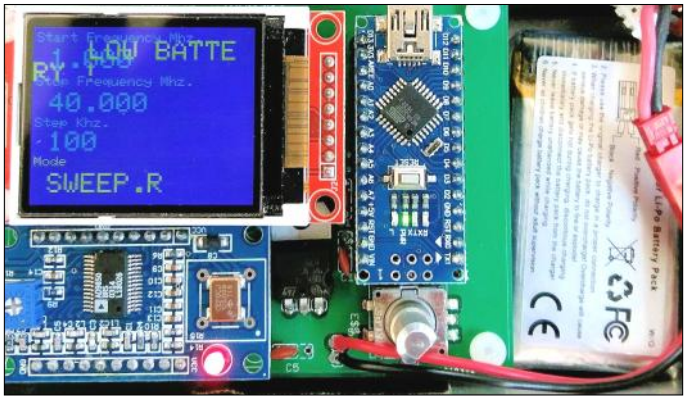
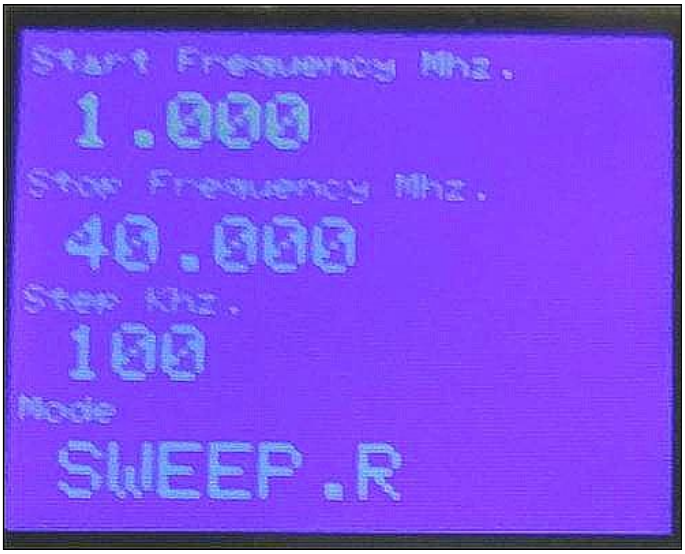



*Fig 3 SNA Jr II Assembled*



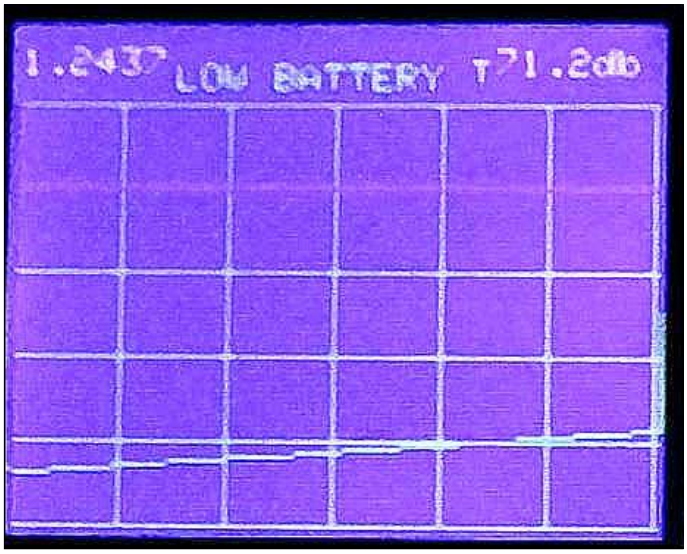
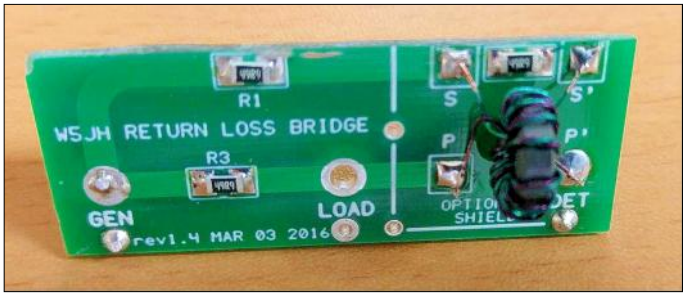




*Fig 4 & 5 Display functions*



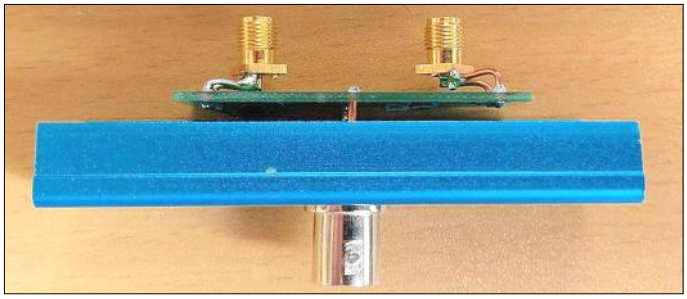



*Fig 6 & 7 Return Loss Bridge*

I had the parts to build the Return Loss Bridge to hand, so assembled that also and look forward to better weather so I can use it in erecting the 80m loop I have planned.

73
Gerry EI8DRB: *gerryk.com*

**Links**
DuWayne KV4QB:
*kv4qb.blogspot.ie/2016/05/sna-jr-version-ii-part-1.html*
Soldersmoke: *soldersmoke.blogspot.ie*
Wes Hayward W7ZOI Power Meter:
*qsl.net/df7tv/pm8307.html*

# IRTS AGM Weekend

## hosted by Dundalk Amateur Radio Society

## 8/9 April 2017

## Crowne Plaza Hotel, Green Park, Dundalk

### Full information - *www.irts.ie/agm*

**AGM Dinner - 7.30 for 8.00pm, Saturday 8th April**

Tickets for the Dinner are €35 each (same as last year) and are available from Pat *EI2HX*, from Brian *EI8EJB* or any IRTS Committee Member. Dress code is smart/casual. Sample menu *here*.

**Special Invitation**

Following the end of the AGM/Rally, the Dundalk Amateur Radio Society will be inviting all attendees to drop by the DARS Club House at 113 Castletown Road for tea/coffee and a chat to wish all a speedy journey home! There will be a call-in to EI7DAR on 145.4 MHz or on the 2m repeater EI2CCR.

# Contest News

**Joe Ryan EI7GY** *contestmanager@irts.ie*

**IRTS Contest Results**

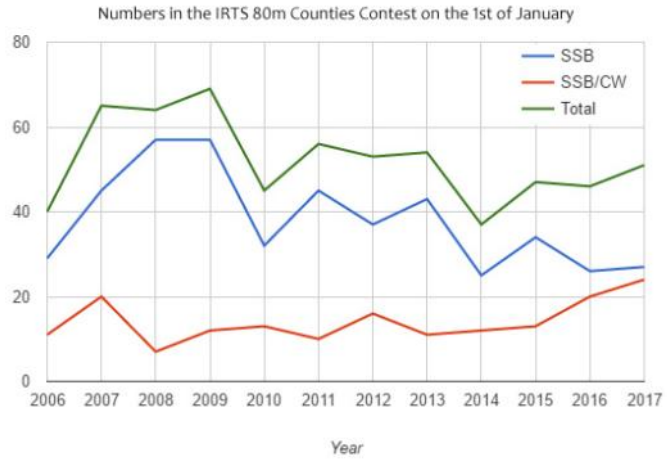
**80 Metres Counties Contest (1st January)**

Our New Year's Day contest has always been the society's best supported contest. This year, logs from 54 stations (including 10 overseas stations) were received. In summary, these logs showed:

- 29 EI/GI counties were active
- the absent counties were Cavan, Longford and Monaghan
- while 29 counties were represented on SSB, only 14 were active on CW
- 1,995 QSOs in the logs
- following log checking, 92 QSOs were disallowed (26 dupes, 66 errors)
- the majority of errors were due to an incorrect call sign being logged
- 32% of QSOs were with overseas stations
- 17% of QSOs were in CW mode

The chart below, submitted by John EI7GL, shows the trend in SSB Only and Mixed Mode SSB/CW logs submitted since the inaugural contest in 2006.

The chart below, submitted by John EI7GL, shows the trend in SSB Only and Mixed Mode SSB/CW logs submitted since the inaugural contest in 2006.




Most contestants, including myself, reported good band conditions but others found them difficult. Even in the middle of winter, 80 metres propagation in daylight is always going to be problematical!

In the feedback included with the logs submitted, it was suggested that it might be better to start the contest an hour earlier, i.e. to run from 14:00 to 16:00 instead of 15:00 to 17:00, because the skip distance lengthened noticeably during the last hour (sunset is around 16:20) so it was therefore more difficult to pick out EI/GI stations from 16:00 onwards. As against this, one G station commented that "... conditions improved in the second hour often by 3 S-points", while another said "Conditions were quite good, improving as time went on".

I put the start time issue to the 54 contesters who submitted logs, indicating that my preference was to stay with the current time of 15:00-17:00 as I have found that the changing propagation conditions on 80m around sunset can help to keep the QSO rate up during the final hour of this single-band contest. The responses to my quick survey were overwhelmingly in favour maintaining the current start time. One of the responses – from an EI station – included this:

> *" ... The change in the band* [in the second hour] *also allows the contester to make a strategic choice... do they go search and pounce for new mults or do they stay and run the frequency making Qs to build the score that way, the balance must be right. If the band is not running long this option cannot be explored."*

Many thanks to those who responded, it is clear that the majority view is to leave the start time at 15:00.

Section winners for this contest are shown in the table opposite together with photos from two of the portable entries.

**70 cms Counties Contest**

Following on a suggestion from a member, we are running a one-hour 70cm contest on Easter Monday (17th April), just before the traditional two metres event, the first time we have run a counties contest on this band. There are mixed mode (SSB/FM) and FM only sections, also an SWL section. If you have 70cm gear, we hope to hear you between 1pm and 2pm on Easter Monday, using the SSB and FM frequencies specified in the rules (see **Links** opposite).

**UKEICC Contests**

The United Kingdom and Ireland Contest Club was formed in 2014 with the aim of promoting the development of HF contesting in the UK and Ireland and encouraging newcomers into HF contesting. Paul EI5DI and Pat EI5IX are among the organisers. The club runs one-hour 80m evening contests twice a month (for SSB and CW respectively) with a distance based scoring system, which is fairly novel for HF contesting. If nothing else, I find that these contests provide a short, sharp lesson in the vagaries of LF propagation: some nights, EI and UK stations can be worked easily but only those with better set-ups can log a significant number of continental European stations; on other nights, we experience the opposite effect, with DX QSOs dominating the logs and great difficulty working local stations.

This series of contests relied almost exclusively on UK and EI stations in the early months, but now – taking January

2017 as an example – nearly 30% of participants are from continental Europe.

UKEICC also runs 24-hour DX contests; the next is a CW event on Saturday 22nd April at 12:00, with separate 12 hour and 24 hour sections.

EI and GI counties are multipliers in these contests – making it (I believe) the only DX contest to do so.

## Forthcoming IRTS Contests

**70 cms Counties** – Monday 17th April 1.00 pm local time (1h)

**2 metres Counties** – Monday 17th April 2.00 pm local time (2h)

**40 metres Counties** – Sunday 7th May 12:00 (2h)

## Links

Contest rules & calendar: *www.irts.ie/contests*

Contest results: *www.irts.ie/results*

UKEICC: *ukeicc.com*

**IRTS Contests : Section Winners**

| 80 Metres Counties Contest (1st January) | |
|---|---|
| SSB Only Fixed | EI4GYB, Roland Byrne |
| SSB Only Fixed (outside Ireland) | 2EØKVJ, Dave Boyes |
| SSB Only Portable | EIØM/P, Mayo Radio Experimenters<br>ops: EI2GCB EI9JA EI9JS |
| SSB/CW Fixed | EI2KA, Tim McKnight |
| SSB/CW Fixed (outside Ireland) | G6MC, Neil Clarke |
| SSB/CW Portable | EI7GY/P, Joe Ryan |
| SSB/CW WAW Stations | EI99WAW, WAW / Cork<br>op: EI8GS |

## EI DXCC Single Band Status

**as at 24th February 2017**

**Compiled by Joe Ryan EI7GY**

| | | 160 | 80 | 40 | 30 | 20 | 17 | 15 | 12 | 10 | 6 | 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **10** | EI2JD | 160 | 80 | 40 | 30 | 20 | 17 | 15 | 12 | 10 | 6 | |
| **10** | EI3IO | 160 | 80 | 40 | 30 | 20 | 17 | 15 | 12 | 10 | 6 | |
| **10** | EI7BA | 160 | 80 | 40 | 30 | 20 | 17 | 15 | 12 | 10 | 6 | |
| **10** | EI9FBB | 160 | 80 | 40 | 30 | 20 | 17 | 15 | 12 | 10 | 6 | |
| **9** | EI2GLB | | 80 | 40 | 30 | 20 | 17 | 15 | 12 | 10 | 6 | |
| **9** | EI6IZ | 160 | 80 | 40 | 30 | 20 | 17 | 15 | 12 | 10 | | |
| **8** | EI6FR | | 80 | 40 | 30 | 20 | 17 | 15 | 12 | 10 | | |
| **8** | EI7GY | | 80 | 40 | 30 | 20 | 17 | 15 | 12 | 10 | | |
| **8** | EI9FVB | | 80 | 40 | 30 | 20 | 17 | 15 | 12 | 10 | | |
| **7** | EI1DG | | | 40 | 30 | 20 | 17 | 15 | 12 | 10 | | |
| **7** | EI4BZ | | 80 | 40 | 30 | 20 | 17 | 15 | | 10 | | |
| **7** | EI8IU | | | 40 | 30 | 20 | 17 | 15 | 12 | 10 | | |
| **6** | EI7JZ | | | 40 | | 20 | 17 | 15 | 12 | 10 | | |
| **6** | EI9HX | | | 40 | | 20 | 17 | 15 | 12 | 10 | | |
| **5** | EI4CF | | | 40 | | 20 | 17 | 15 | | 10 | | |
| **5** | EI4GJB | | | | | 20 | 17 | 15 | 12 | 10 | | |
| **5** | EI6AL | | | | | 20 | 17 | 15 | 12 | 10 | | |
| **5** | EI6JK | | | 40 | | 20 | | 15 | 12 | 10 | | |
| **5** | EI8GS | | 80 | 40 | | 20 | | 15 | | 10 | | |
| **5** | EI9E | | 80 | 40 | | 20 | | 15 | | 10 | | |
| **5** | EI9GLB | | | | | 20 | 17 | 15 | 12 | 10 | | |
| **5** | EI9JF | | | 40 | 30 | 20 | 17 | 15 | | | | |
| **4** | EI3GV | | | | | 20 | 17 | 15 | | 10 | | |
| **3** | EI3CTB | | | | | 20 | | 15 | | 10 | | |
| **3** | EI4GK | | | | | 20 | | 15 | | 10 | | |
| **3** | EI4GNB | | | | | 20 | | 15 | | 10 | | |
| **3** | EI4HH | | | | | 20 | | 15 | | 10 | | |
| **3** | EI5IF | | | | | 20 | | 15 | | 10 | | |
| **3** | EI6FM | | | | | 20 | | 15 | | 10 | | |
| **3** | EI6HB | | | | | 20 | | 15 | | 10 | | |
| **3** | EI7GL | | | 40 | | | | | | 10 | 6 | |
| **3** | EI9HQ | | | | | 20 | | 15 | | 10 | | |
| **2** | EI2II | | | | | 20 | | | | 10 | | |
| **2** | EI5EV | | | | | 20 | | | | 10 | | |
| **2** | EI7IG | | | | | 20 | | 15 | | | | |
| **2** | EI7JN | | | | | 20 | | 15 | | | | |
| **2** | EI8IQ | | | | | 20 | | 15 | | | | |
| **2** | EI8JX | | | | | 20 | | 15 | | | | |
| **1** | EI3EBB | | | | | | | | | | 6 | |
| **1** | EI3HA | | | | | 20 | | | | | | |
| **1** | EI4DQ | | | | | | | | | | | 2 |
| **1** | EI5FQB | | | | | 20 | | | | | | |
| **1** | EI5GSB | | | | | 20 | | | | | | |
| **1** | EI6S | | 80 | | | | | | | | | |
| **1** | EI9CJ | | | | | | | | | 10 | | |
| | | 160 | 80 | 40 | 30 | 20 | 17 | 15 | 12 | 10 | 6 | 2 |

*Portable shack and antenna: EIØM/P, Mayo Radio Experimenters*

*Ger EI5KF operating on the roadside at Knockanevin, Co. Cork with the Avondhu Radio Club call sign EI1E/P.*

# EI DXCC Listings - Compiled by Joe Ryan EI7GY

## as at 24th February 2017

**Entries in Bold Type show changes since 30th November 2016**

### Mixed

| | |
|---|---|
| 357 | EI6S |
| 353 | EI7CC |
| 348 | EI6FR |
| 346 | EI8EM |
| 345 | EI7BA |
| 334 | EI3IO |
| 333 | EI9FBB |
| 329 | EI5GM |
| 328 | EI9O |
| 324 | EI2GLB |
| **312** | **EI6IZ (+5)** |
| 312 | EI8FH |
| 310 | EI4II |
| **308** | **EI8IU (+2)** |
| 306 | EI2HY |
| 306 | EI4CF |
| 303 | EI2CR |
| 296 | EI2JD |
| 295 | EI9FVB |
| **294** | **EI7JZ (+2)** |
| 287 | EI9JF |
| 279 | EI9GLB |
| 269 | EI8GS |
| 268 | EI6AL |
| 267 | EI4BZ |
| **263** | **EI5JQ (+148)** |
| 262 | EI2GX |
| **249** | **EI1DG (+1)** |
| 245 | EI5GUB |
| 243 | EI6JK |
| 237 | EI7GY |
| 235 | EI4HH |
| 230 | EI4GXB |
| 215 | EI6FM |
| 214 | EI5IF |
| 212 | EI9E |
| 210 | EI6IL |
| 209 | EI7JN |
| 197 | EI4IR |
| 193 | EI3HA |
| 191 | EI6HB |
| 189 | EI9HQ |
| **184** | **EI5EV (+11)** |
| 175 | EI7IG |
| 174 | EI3CTB |
| 170 | EI4GNB |
| 162 | EI5FQB |
| 161 | EI9CN |
| 160 | EI4GZB |
| 135 | EI9CF |
| 131 | EI5GSB |
| 128 | EI8HA |
| 127 | EI9CJ |
| 116 | EI6CPB |
| 104 | EI9GWB |
| 103 | EI3HDB |
| 101 | EI7JQ |
| 101 | EI8JB |
| 100 | EI3GAB |
| 100 | EI4HQ |
| 100 | EI8KF |
| 100 | EI9GGB |

### CW

| | |
|---|---|
| **343** | **EI6FR (+5)** |
| 339 | EI7BA |
| 333 | EI7CC |
| 319 | EI9FBB |
| **309** | **EI6IZ (+6)** |
| 305 | EI8FH |
| 301 | EI3IO |
| 293 | EI4CF |
| 290 | EI2GLB |
| **284** | **EI8IU (+1)** |
| 279 | EI2JD |
| 253 | EI9JF |
| 248 | EI6AL |
| 246 | EI4BZ |
| 238 | EI5GM |
| 230 | EI7GY |
| **212** | **EI1DG (+1)** |
| 200 | EI8JX |
| 190 | EI9FVB |
| **176** | **EI7JZ (+6)** |
| 169 | EI7IG |
| 168 | EI4HH |
| 127 | EI9CF |
| 126 | EI4BK |
| 116 | EI9E |
| 113 | EI2KK |
| 109 | EI2IH |
| 104 | EI6HB |
| 100 | EI3CTB |
| 100 | EI3KE |
| 100 | EI3KG |

### Phone

| | |
|---|---|
| 354 | EI6S |
| 351 | EI7CC |
| 346 | EI8EM |
| 343 | EI7BA |
| 338 | EI6FR |
| 331 | EI8AR |
| 321 | EI9FBB |
| 309 | EI3GV |
| 307 | EI3IO |
| **306** | **EI9HX (+3)** |
| 300 | EI4GK |
| 291 | EI2GLB |
| 288 | EI9FVB |
| **281** | **EI7JZ (+2)** |
| 280 | EI2JD |
| 279 | EI9GLB |
| 275 | EI4CF |
| **275** | **EI8IU (+1)** |
| 269 | EI8GS |
| 241 | EI6JK |
| 225 | EI9JF |
| 222 | EI8FH |
| 216 | EI7GL |
| 212 | EI4BZ |
| 212 | EI4HH |
| 212 | EI6AL |
| 211 | EI6FM |
| 208 | EI4GJB |
| 208 | EI9E |
| 200 | EI6IL |
| 191 | EI3HA |
| 188 | EI2CH |
| 186 | EI7II |
| 186 | EI9HQ |
| 177 | EI5IF |
| 177 | EI9FE |
| 162 | EI5FQB |
| 160 | EI2II |
| 160 | EI6HB |
| 159 | EI9CN |
| 157 | EI4GNB |
| 143 | EI3CTB |
| 131 | EI5GSB |
| 116 | EI6CPB |
| **104** | **EI1DG (+2)** |
| 103 | EI3HDB |
| 103 | EI6GGB |
| 102 | EI4DJB |
| 101 | EI3IP |
| 100 | EI3GAB |

### RTTY/Digital

| | |
|---|---|
| 304 | EI7BA |
| **241** | **EI6FR (+3)** |
| **227** | **EI1DG (+3)** |
| **208** | **EI8IU (+1)** |
| 199 | EI2GLB |
| 195 | EI8FH |
| 129 | EI3CTB |
| 121 | EI6HB |
| 108 | EI5IF |

### 160m

| | |
|---|---|
| 250 | EI7BA |
| 213 | EI3IO |
| **144** | **EI6IZ (+2)** |
| 138 | EI9FBB |
| 122 | EI2JD |

### 80m

| | |
|---|---|
| 310 | EI6S |
| 298 | EI7BA |
| 244 | EI9FBB |
| **168** | **EI6FR (+3)** |
| 166 | EI2JD |
| 151 | EI3IO |
| **145** | **EI6IZ (+8)** |
| 120 | EI2GLB |
| 120 | EI4BZ |
| 116 | EI9E |
| 108 | EI7GY |
| 103 | EI8GS |
| 100 | EI9FVB |

### 40m

| | |
|---|---|
| 318 | EI7BA |
| 257 | EI9FBB |
| **252** | **EI6FR (+2)** |
| **216** | **EI6IZ (+8)** |
| 209 | EI4CF |
| 202 | EI2JD |
| 202 | EI3IO |
| 191 | EI2GLB |
| 177 | EI9JF |
| 154 | EI6JK |
| **145** | **EI7JZ (+3)** |
| 139 | EI4BZ |
| 138 | EI9E |
| 129 | EI8GS |
| **128** | **EI9HX (New)** |
| 121 | EI9FVB |
| **120** | **EI1DG (+9)** |
| 120 | EI7GY |
| 117 | EI7GL |
| **114** | **EI8IU (+4)** |

### 30m

| | |
|---|---|
| 332 | EI7BA |
| 256 | EI9FBB |
| **250** | **EI6FR (+4)** |
| **233** | **EI6IZ (+8)** |
| 231 | EI3IO |
| 167 | EI9JF |
| 159 | EI2GLB |
| 156 | EI7GY |
| **135** | **EI8IU (+6)** |
| 124 | EI2JD |
| 120 | EI4BZ |
| 106 | EI9FVB |
| **104** | **EI1DG (+2)** |

### 20m

| | |
|---|---|
| 340 | EI7BA |
| 336 | EI6FR |
| 326 | EI9FBB |
| 261 | EI3IO |
| 257 | EI2JD |
| **257** | **EI9HX (New)** |
| 256 | EI4CF |
| 251 | EI9FVB |
| **250** | **EI8IU (+4)** |
| 248 | EI2GLB |
| **247** | **EI6IZ (+9)** |
| **220** | **EI7JZ (+4)** |
| 217 | EI9JF |
| 211 | EI8GS |
| 197 | EI4BZ |
| **190** | **EI1DG (+4)** |
| 176 | EI9E |
| 173 | EI9GLB |
| 171 | EI7JN |
| 161 | EI6JK |
| 161 | EI7GY |
| 152 | EI8JX |
| 151 | EI6FM |
| 145 | EI6HB |
| 144 | EI4GJB |
| 139 | EI9HQ |
| 138 | EI6AL |
| 135 | EI4HH |
| 133 | EI5FQB |
| 133 | EI5IF |
| 130 | EI3GV |
| 129 | EI4GNB |
| 126 | EI3CTB |
| 126 | EI3HA |
| 115 | EI7IG |
| 113 | EI4GK |
| 112 | EI8IQ |
| 105 | EI2II |
| 102 | EI5EV |
| 102 | EI5GSB |

### 17m

| | |
|---|---|
| 334 | EI7BA |
| 306 | EI9FBB |
| **297** | **EI6FR (+3)** |
| **244** | **EI8IU (+1)** |
| **238** | **EI6IZ (+13)** |
| 210 | EI2GLB |
| **203** | **EI9FVB (+1)** |
| 191 | EI2JD |
| 170 | EI6AL |
| 163 | EI7GY |
| 162 | EI4CF |
| **161** | **EI7JZ (+3)** |
| **155** | **EI9HX (New)** |
| **147** | **EI1DG (+5)** |
| 146 | EI3IO |
| 146 | EI9JF |
| 127 | EI4GJB |
| 121 | EI9GLB |
| 111 | EI4BZ |
| 108 | EI3GV |

### 15m

| | |
|---|---|
| 333 | EI7BA |
| **312** | **EI6FR (+1)** |
| 304 | EI9FBB |
| **254** | **EI8IU (+1)** |
| 251 | EI4CF |
| 250 | EI2GLB |
| 243 | EI9FVB |
| 231 | EI2JD |
| 227 | EI3IO |
| **223** | **EI6IZ (+7)** |
| 202 | EI4BZ |
| **194** | **EI7JZ (+3)** |
| 193 | EI6JK |
| 187 | EI9E |
| **182** | **EI1DG (+4)** |
| 181 | EI8GS |
| **172** | **EI9HX (New)** |
| 168 | EI6AL |
| 151 | EI7GY |
| **149** | **EI8IQ (New)** |
| 148 | EI4HH |
| 139 | EI9GLB |
| 136 | EI6HB |
| 132 | EI4GNB |
| 126 | EI8JX |
| 125 | EI6FM |
| 122 | EI3CTB |
| 120 | EI4GJB |
| 113 | EI3GV |
| 109 | EI7JN |
| 107 | EI5IF |
| **105** | **EI5EV (New)** |
| 105 | EI9HQ |
| 105 | EI9JF |
| 104 | EI4GK |
| 104 | EI7IG |

### 12m

| | |
|---|---|
| 324 | EI7BA |
| 281 | EI9FBB |
| **210** | **EI8IU (+1)** |
| **204** | **EI9FVB (+2)** |
| **185** | **EI6FR (+3)** |
| 164 | EI2GLB |
| **164** | **EI6IZ (+9)** |
| 154 | EI6AL |
| 147 | EI2JD |
| 140 | EI6JK |
| **133** | **EI7JZ (+2)** |
| **131** | **EI1DG (+1)** |
| 128 | EI3IO |
| 117 | EI7GY |
| **110** | **EI9HX (New)** |
| 103 | EI9GLB |
| 100 | EI4GJB |

### 10m

| | |
|---|---|
| 307 | EI7BA |
| 284 | EI9FBB |
| 262 | EI3IO |
| 227 | EI2GLB |
| 222 | EI6FR |
| **212** | **EI9FVB (+1)** |
| **200** | **EI8IU (+2)** |
| 199 | EI4CF |
| 197 | EI2JD |
| 183 | EI4BZ |
| 173 | EI6JK |
| 173 | EI9E |
| 171 | EI8GS |
| **170** | **EI1DG (+3)** |
| **170** | **EI6IZ (+8)** |
| 167 | EI6AL |
| **167** | **EI7JZ (+3)** |
| 166 | EI4HH |
| 144 | EI7GL |
| 140 | EI6FM |
| 136 | EI4GK |
| 131 | EI7GY |
| 125 | EI9GLB |
| 123 | EI4GNB |
| 116 | EI3CTB |
| 116 | EI9HQ |
| 112 | EI4GJB |
| 111 | EI9CJ |
| **111** | **EI9HX (New)** |
| 105 | EI6HB |
| 104 | EI3GV |
| 101 | EI2II |
| 101 | EI5EV |

### 6m

| | |
|---|---|
| 164 | EI3IO |
| 150 | EI9FBB |
| 115 | EI7BA |
| 111 | EI7GL |
| 108 | EI2GLB |
| 107 | EI2JD |
| 101 | EI3EBB |

### 2m

| | |
|---|---|
| 145 | EI4DQ |

## DXCC Honor Roll

### Mixed

| | |
|---|---|
| 339 | EI6FR/348 |
| 339 | EI7BA/345 |
| 338 | EI7CC/353 |
| 337 | EI6S/357 |
| 337 | EI8EM/346 |
| 330 | EI3IO/334 |
| 330 | EI9FBB/333 |

### Phone

| | |
|---|---|
| 337 | EI7BA/343 |
| 337 | EI8EM/346 |
| 336 | EI6S/354 |
| 336 | EI7CC/351 |
| 330 | EI6FR/338 |

### CW

| | |
|---|---|
| **337** | **EI6FR/343 (+5)** |
| 334 | EI7BA/339 |

## DXCC Challenge

| | |
|---|---|
| 2911 | EI7BA |
| 2526 | EI9FBB |
| **2127** | **EI6FR (+23)** |
| 1964 | EI3IO |
| **1840** | **EI6IZ (+73)** |
| 1729 | EI2JD |
| 1726 | EI2GLB |
| 1720 | EI7CC |
| **1524** | **EI8IU (+35)** |
| **1504** | **EI9FVB (+4)** |
| 1466 | EI4CF |
| **1206** | **EI1DG (+51)** |
| 1163 | EI4BZ |
| 1160 | EI7GY |
| **1156** | **EI7JZ (+24)** |
| 1090 | EI6JK |
| **1060** | **EI9HX (New)** |
| 1059 | EI5GM |
| 1018 | EI9JF |

## The following Silent Keys were holders of DXCC Awards

### DXCC Honor Roll

**Mixed**

| | |
|---|---|
| 336 | EI8H/365 |
| 331 | EI2GS/340 |

### DXCC

**Mixed**

| | |
|---|---|
| 365 | EI8H |
| 340 | EI2GS |

**CW**

| | |
|---|---|
| 109 | EI4HM |

**Phone**

| | |
|---|---|
| 338 | EI2GS |
| 300 | EI8AU |
| 114 | EI4EX |
| 105 | EI1CS |

# Irish Radio Transmitters Society

## Annual General Meeting
## April 9th 2017
## Crowne Plaza Hotel, Dundalk

Members are hereby notified that the Annual General Meeting of the Irish Radio Transmitters Society will be held at 2pm on Sunday April 9th 2017 at the Crowne Plaza Hotel, Green Park, Dundalk.

**Committee Nominations**

Rule 23.1 requires that the committee shall, at least 28 days prior to the Annual General Meeting, send to all paid-up members a list showing the nominees for the offices of President and Vice-President and eleven committee positions.

The following are the Committee's nominations;

| | | |
|---|---|---|
| President | Gerry Gervin | EI8CC |
| Vice-President | Jim Holohan | EI4HH |

**Committee**

| | |
|---|---|
| John Owen-Jones | EI1EM |
| Pat Fitzpatrick | EI2HX |
| Dave Court | EI3IO |
| Seán Donelan | EI4GK |
| Dave O'Connor | EI6AL |
| Brendan Minish | EI6IZ |
| Anthony Dolan | EI6GGB |
| John McCarthy | EI8JA |
| Tom McDermott | EI9CJ |
| Larry McGriskin | EI9CN |
| Pat O'Connor | EI9HX |

The names of other members eligible and willing to serve as President, Vice-President or as committee members shall be added to the list upon receipt of nominations in writing, by any ten members in the case of a nominee for the Presidency or Vice-Presidency or by any two members in the case of a nominee for any of the eleven committee positions. (Rule 23.2)

# IRTS Shop

IRTS Members can avail of a 10% discount on purchases from the RSGB on line shop. IRTS members should select the **"*Non member's Price*"** before placing the order and then enter the special IRTS Discount Code during the checkout process. At this point the 10% discount will be calculated.

IRTS members who are also RSGB members should continue to select the "*RSGB Member's Price*" and not use the IRTS Discount Code.

The IRTS Discount Code will change from time to time. Currently the Code is:

**IRTS2020XWW**

The RSGB Shop can be accessed from the link on the IRTS website or at

**www.rsgbshop.org**

The RSGB Shop stocks a comprehensive range of books on radio and related topics by RSGB and other publishers.

**Echo Ireland - the Journal of IRTS**, the Irish Radio Transmitters Society, is published quarterly. The Society also publishes **EiNews -** a monthly newsletter**.**

Private advertisements from paid-up members are published free of charge.

Articles and event information for publication are welcomed. Send your manuscript to *newsteam@irts.ie* as a word-processing file attachment, **not as a PDF**. Please do not attempt to format the document to look like a printed page. Images and illustrations should be embedded in the file *for position only*. If you do not also send your images as separate high-resolution files, they will not be used. Make sure to put captions for all images and illustrations at the end of the article, rather than embedded within the images or the main text of your article. Please include the full names and call signs of people included in photos and where necessary obtain their permission.

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**IRTS QSL Service**
**Special Event Call Signs**

The outwards and inwards QSL service is available free to IRTS members, whether individuals or clubs, for their own call and for special event stations licensed to them.

The service is also available free to JOTA stations, irrespective of whether an IRTS member is the licence holder. Operators of Special Event stations should supply details of their Special Event call to the relevant incoming QSL Manager.

**Echo Ireland**
**June 2017**
Copy deadline - **15th May**
Articles to **newsteam@irts.ie**

# Members Ads

**For Sale:** Yaesu FT1000MP 80-10m in good condition €1000
Brendan EI4BB 087 250 8651

**For Sale:** Kenwood TS-2000, Kenwood SM-220 monitor scope, Kenwood SP-23 speaker, Kenwood SP-50 psu, 2m/70cm duplexer, original mic leads, box, booklet, pwo, €1000. Joe EI4GX, 083 181 3548
*joseph.earley@upcmail.ie*

**For Sale:** Icom 756 Pro 2 €735 ono
Chris 087 322 3022
*ei9czb@eircom.net*

**Free:** SDX by EI5DI. DXpedition & Special-Event logger - runs on Windows - *ei5di.com/sdxsetup.exe*




*Raymond Long (Long Communications) at the 2017 Coolmine Rally*